

April 14, 1958

PURCHASING

The Methods and News Magazine for Industrial Buyers

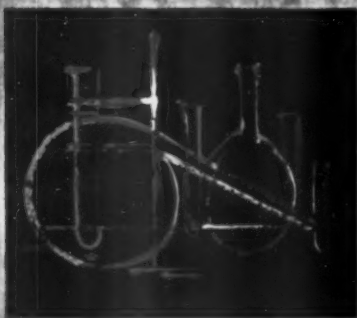


Monsanto Chemical's H. J. Heffernan

Purchasing's Strategic Role in the Big Chemical Company

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Nips Crime at the Roots

For years, the insect "underworld" raided the nation's cornfields. But no longer without penalty! There's a new "policeman" on that beat . . .

That policeman is a powerful insecticide, *aldrin*. Standing watch *under* our most valuable crop, *aldrin* keeps the delicate feeder roots free from harm. Used before or at time of planting, *aldrin* destroys rootworms, wireworms, seed corn maggots, white grubs, and other cornfield soil pests when they eat, inhale, or merely *touch* it.

The result? *Welcome harvest news*: More plants survive, corn stalks withstand windstorms better with deep, natural roots. But wind or no wind, good roots mean better yields. And the stalks stand straight for efficient mechanical picking.

Protecting vital crops against the costly ravages of root-destroying soil insects is another of the many ways Shell Chemical serves the farmer.

Shell Chemical Corporation

Chemical Partner of Industry and Agriculture
NEW YORK



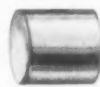


SKF puts its best foot forward

You're taking a step in the right direction when you call in the SKF man. First—you are enlisting the aid of a skilled engineer who is eager to apply his broad background and experience to your particular anti-friction prob-

lems. Second—he's the man that has a complete line of bearings available (more than 3000 sizes in the four basic types). Need convincing? Just call the nearest SKF office—and watch him prove it!

7823



Spherical, Cylindrical, Ball, and *Tyson* Tapered Roller Bearings

EVERY TYPE—EVERY USE

SKF

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

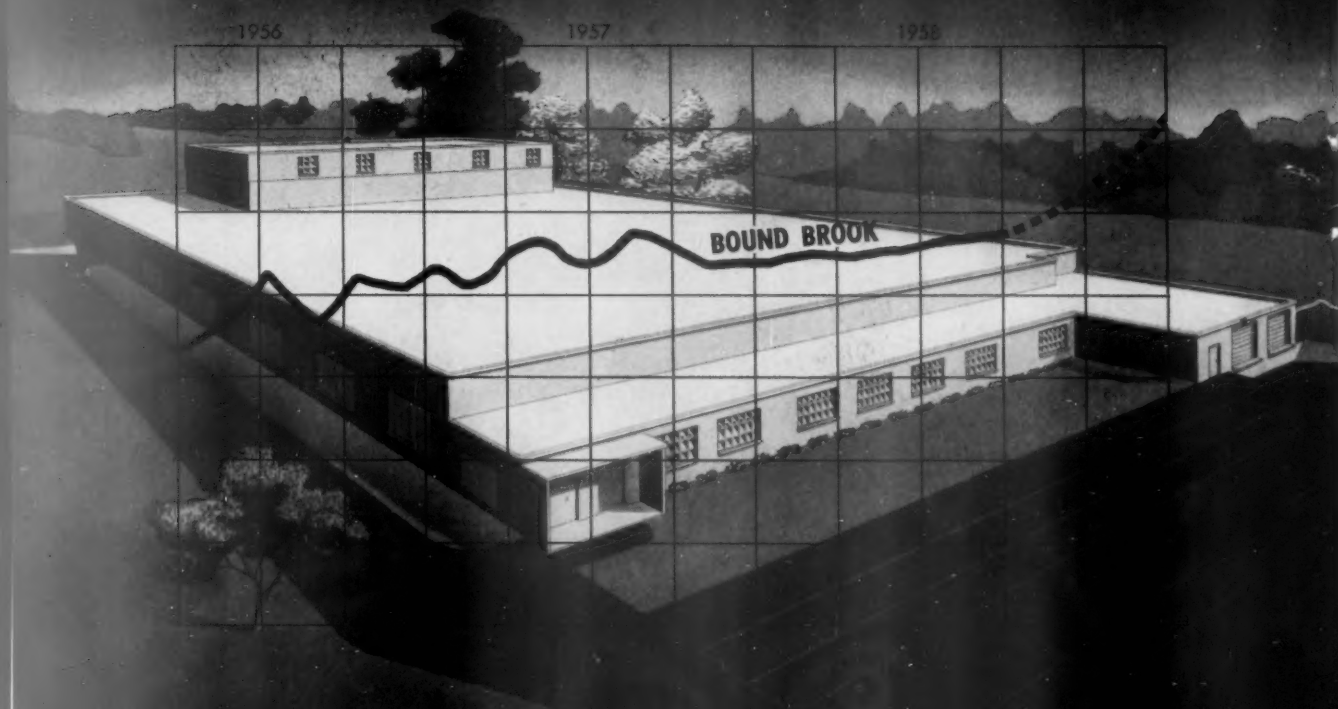
*REG. U. S. PAT. OFF.

APRIL 14, 1958

For More Information Write No. 154 on Inquiry Card—Page 32

1

NEWS ITEM No. 4 — 1958 — NEW PLANT IN STURGIS, MICHIGAN



WHY EXPAND?

1. CONFIDENCE IN OUR CUSTOMERS
2. CONFIDENCE IN OUR COUNTRY
3. CONFIDENCE IN BOUND BROOK'S ABILITY TO GIVE THE FINEST SERVICE IN THE FIELD OF POWDER METALLURGY

BOUND BROOK

BOUND BROOK OIL-LESS BEARING CO., EST. 1883, BOUND BROOK, N. J.

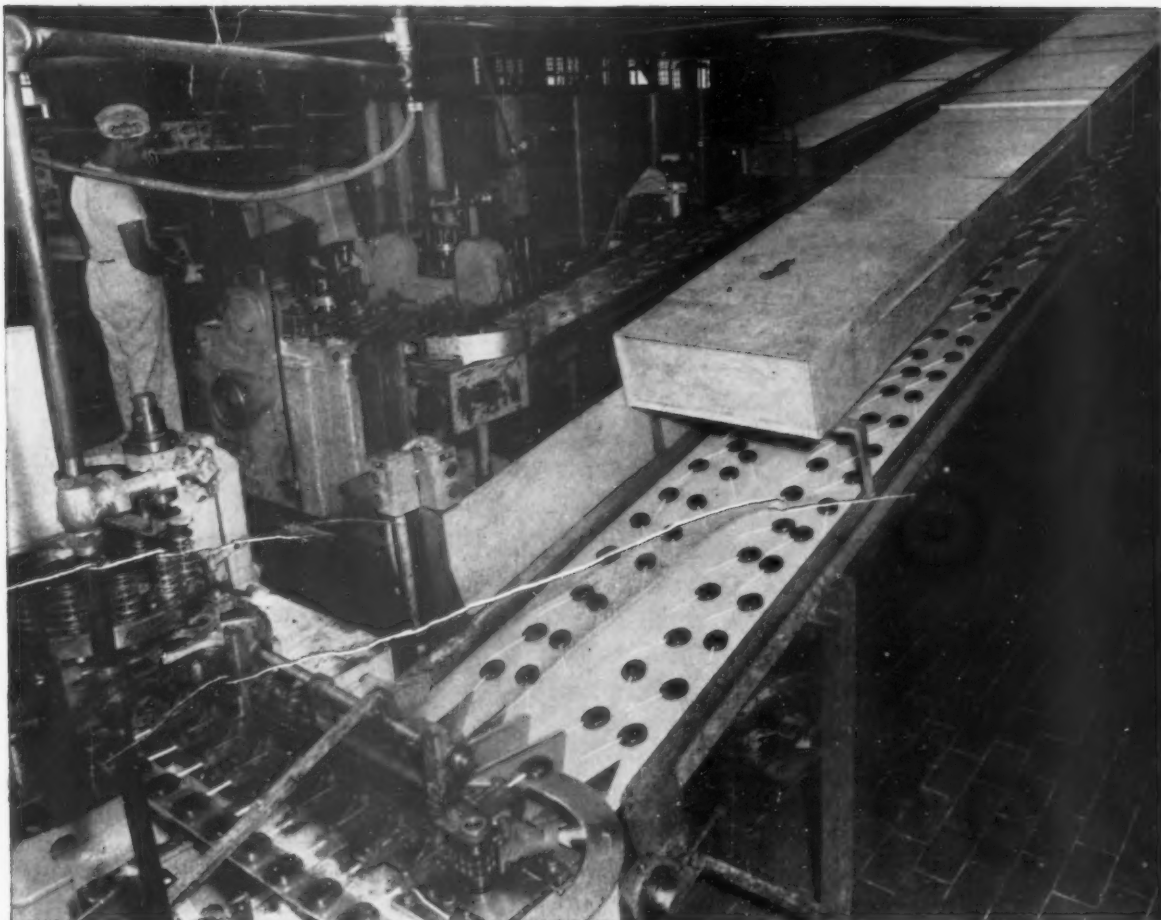
Pioneer in

POWDER METALLURGY BEARINGS + PARTS

our  75TH year



B.F. Goodrich report:



Koroseal keeps millions of lollipops on the march

A typical example of B.F. Goodrich product improvement

Problem: In this plant, lollipops the millions are made without ever being touched by workers' hands. Conveyor belts carry them from the machines that form them to other machines where they're wrapped and packaged. At first, belts made of canvas were used. But, too often, the hot, tacky candy would stick to the canvas, cause messy jam-ups.

What was done: When a B.F. Goodrich distributor learned of the problem, he recommended belts made of Koroseal flexible material. The Koroseal belt has a smooth, polished surface. Even hot candy won't stick to it, food par-

ticles can't grind in. It has no odor, no taste, never gets rancid. Koroseal belts are as clean as your dishes at home and just as easy to wash.

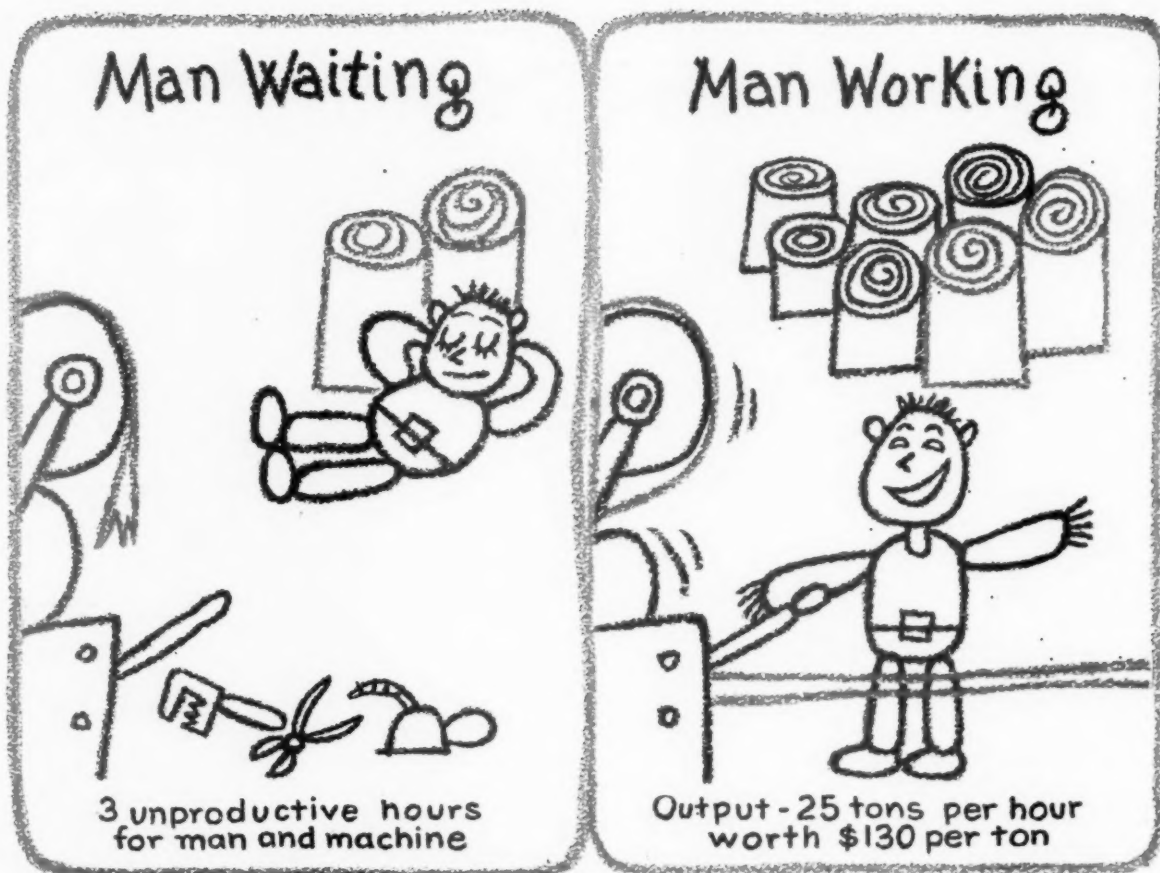
Savings: In the past two years, B.F. Goodrich belts have kept millions of lollipops on the march, without jam-ups or trouble of any kind.

Extra benefits: In addition to their widespread use in the food industry to handle everything from fish to nuts, Koroseal belts are also at work in industry—on inspection lines, in automation applications, and on production lines where rough, oily parts and hard wear would wreck other belts.

Where to buy: Your B.F. Goodrich distributor has exact specifications for the Koroseal belt described here. And, as a factory-trained specialist in rubber products, he can answer your questions about all the products B.F. Goodrich makes for industry. B.F. Goodrich Industrial Products Co., Dept. M-309, Akron 18, Ohio.

Koroseal—T. M. Reg. U. S. Pat. Off.

B.F. Goodrich
INDUSTRIAL PRODUCTS



In the past, production losses due to breakdown of dryer roll bearings were so small they could be made up.

Today shut down of high-speed machines puts production behind by hundreds of tons per hour—quickly piles up losses.

Lubricating plan cuts downtime —can save \$10,000 in 3 hours

Not so long ago, machines shut down by bearing failure could make up production losses. Today volume output and integrated production mean that production losses are losses in profit. These are the reasons behind management's growing concern with lubrication methods in their plants.

Take this example from the paper industry: they used to figure \$500 for a bearing, \$500 for labor (idle time and repair crew) and expected to make up losses on the two or three hours downtime. Today, high speed machines produce twenty-five tons of paper per hour worth \$130 per ton. You can't ignore \$3,000 an hour in production

losses. In this case, the cost of the bearing replacement could run as high as \$10,000.

Lubrication problems differ with specific industries, but the basic principles are the same. Many companies are finding that the services of a plant lubrication engineer pay off. His services can extend part life, eliminate production losses, reduce rejects, simplify lubricant inventories and otherwise add to income. Some companies delegate lubrication responsibility to engineers or plant personnel who also perform other duties.

In both cases, Texaco's organization of Lubrication Engineers is function-

ing in all 48 States, as consultants in outlining a practical approach to these problems. A more detailed discussion is available in an enlightening booklet: "Management Practices That Control Costs Via Organized Lubrication." Write The Texas Company, 135 E. 42nd St., New York 17, N. Y., Dept. P11.



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL
(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

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PURCHASING

The Methods and News Magazine For Industrial Buyers

APRIL 14, 1958
Volume 44, No. 8

B. P. MAST
Chairman of the Board

RAY RICHARDS
Publisher

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single copies 75 cents; elsewhere, \$50.00 per
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How V-Belts with the Green Seal save you money

They're dimensionally stable — Exclusive 3-T Cords or unsurpassed steel cables muscle belts that don't shrink or stretch in storage. So matched sets *stay* matched. Down time is cut to a new low.

They're precisely measured — The length you need is the length you get. Mismatching failures are minimized.

They're high in modulus, low in stretch — Power loss through "creep" is virtually eliminated. Take-ups are few and far between.

They're friction-balanced, non-dusting — Their covers don't grab or stick in the grooves. They run smoothly and cleanly.

They're mildew-inhibited — They're safely stored and operated in high moisture. Stand-by drives always ready when needed.

—AND IT ALL ADDS UP TO

—Maximum trouble-free horsepower hours at minimum cost. It's reason aplenty that you should use only V-Belts with the Green Seal. See your Goodyear Distributor for details. Or write Goodyear, Industrial Products Division, Lincoln 2, Nebraska, or Akron 16, Ohio.

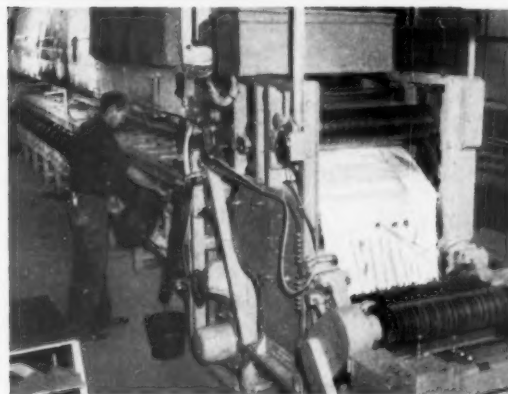
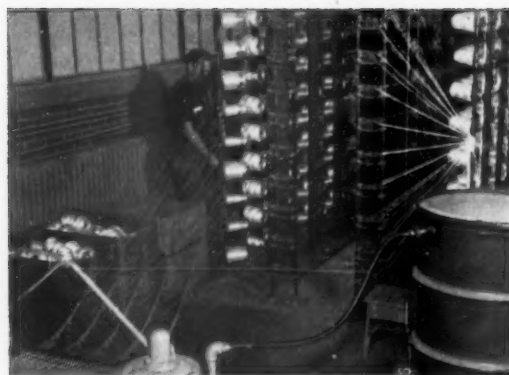
DIMENSIONALLY STABLE V-BELTS with the GREEN SEAL by

GOOD YEAR

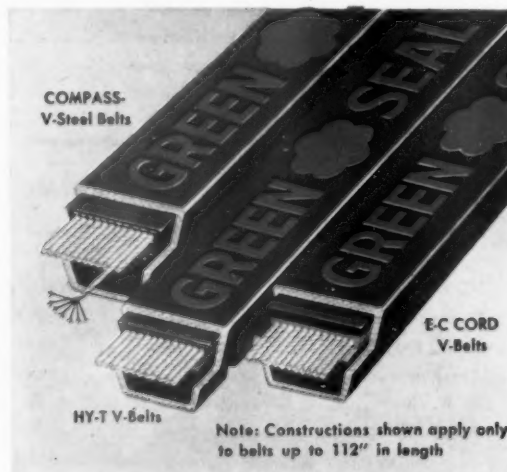
THE GREATEST NAME IN RUBBER

Compass, E-C Cord, Hy-T, Green Seal—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

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Moneysaving performance is built into every Goodyear V-Belt in exclusive manufacturing processes like those illustrated above. Synthetic fiber cords are impregnated repeatedly with special rubber latex compounds. When treated at a precise tension and temperature for a precise time (the exclusive 3-T process), the cords are stabilized at the point of greatest strength before being built into the load-carrying section of Goodyear V-Belts.



Straws in the Trade Wind

► **METALS WEAKENING**—Softness in the metal markets continues to spread. First British steelmakers cut steel prices one to three per cent. Then aluminum dropped 2¢ a pound. And now lead (off 1¢) and zinc appear to be in worse shape than ever. Reason: the government's announcement that it would end its stockpile buying program on these metals by mid-year.

► **HOW TO SAVE \$8000**—Here's how a P.A. for a chemical company turned the trick on some MRO items he was purchasing at the rate of about \$100,000 per year. Though he was receiving maximum quantity discounts, no further savings seemed possible because many of these items were "fair traded" or franchised. This, of course, meant that they were high profit items for the suppliers. The P.A. found that by promising to concentrate more of these high-profit fixed-price purchases with one supplier, he was able to get throw-in discounts of up to 50 per cent on some of the non-fixed-price items he was buying from the same supplier. Over the year, the total saving from this bit of skilled negotiating amounted to \$8000.

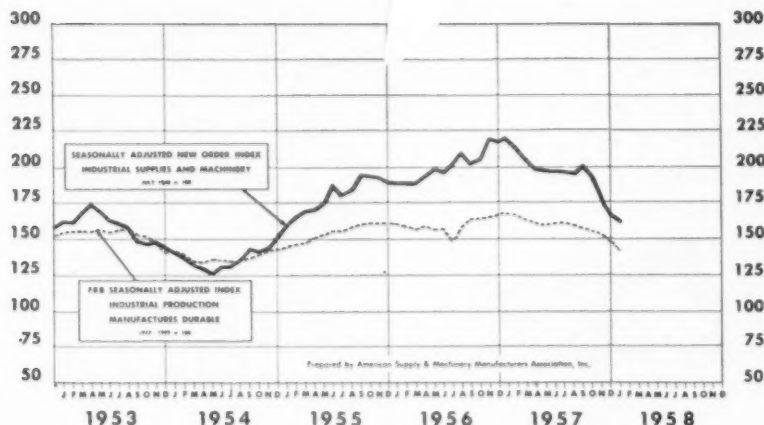
► **CHEMICAL MILLING UPSURGE?**—Chemical milling—a method of shaping metal parts by chemical action instead of machining—is beginning to gain wider acceptance. Some of the reasons: it's possible to reach areas of metal

For the P.A.'s Hot File . . .

Reciprocity pressures are mounting. It's a natural result of the recession. Now even some of the small companies are refusing to buy from large corporations unless they can get assurance that part of the business will be returned. Slipping sales, declining profit margins and the general business climate are all somewhat responsible for this attitude. What it boils down to is this: P.A.'s can expect to get more suggestions from the sales department on where to place certain orders.

parts that machine tools can't touch; hardness of the metal isn't a factor; and costs can often be lowered. Its most extensive application thus far has been in the aircraft and missiles industry, but it has also been used successfully on castings and forgings for a wide variety of industrial uses.

► **COPPER FIGHTING BACK**—Copper producers are counter-punching to regain some of the lucrative markets taken over by aluminum. With the prices of the two commodities now competitive, a top executive of the Anaconda Co. says there is not "likely to be an appreciable further replacement of copper by aluminum in



The volume of new orders for production tools, equipment and supplies placed by industrial distributors with their manufacturing sources continues to decline in 1958. According to the latest report from the American Supply and Machinery Manufacturers' Association, the new order index stands at 163—down 58 points from the all-time high of January 1957.

NB FACTS



Pine block serves as bearing for this undershot mill wheel powering a generator for electricity at a blacksmith shop in the Italian Tyrol. Constant flow of water from pipe provides lubrication.

Is pillow block inefficiency costing your plant money?

The need for relubrication of pillow blocks is more than costly today! It's passé. For New Departure's new pillow block line is built around the performance-proved Type AE adapter ball bearing with Senti-Seals. Dirt, moisture and wear are sealed out . . . grease is sealed in — for life! Send for details about New Departure pillow blocks. Ask today for Catalog PBC-A.



These bearings are quickly and easily applied to shafting without special tools. They are positively locked in position with eccentric cam locking collar and set screw.



NEW DEPARTURE

DIVISION OF GENERAL MOTORS, BRISTOL, CONN.

NOTHING ROLLS LIKE A BALL

For More Information Write No. 159 on Inquiry Card—Page 32

Straws in the Trade Wind

the foreseeable future." And General Cable Corp. reports "certain power utilities and other consumers" have switched back to copper wiring and cables where they had previously used aluminum.

► **TRUCK LCL CHARGES DOWN**—A large interstate trucking company lowered LCL charges on some items up to 65 per cent. Among the categories involved are steel, wheeled tool cabinets and household vacuum cleaners.

► **INCREASED ACRYLIC LATEX PAINT SALES**—The volume of acrylic latex paint used in this country rose about 30 per cent last year. Superior weather and alkali resistance are cited as an important factor in industry's increased consumption of the paint.

► **WOOD THAT WON'T DECAY**—A research study presented at a conference of the Society of the Plastics Industry reports that plastic-coated wood will not decay regardless of moisture conditions. The reasons: the reinforced plastic protects the wood surface by keeping out decay fungi, and the wood is internally sterile because it is kiln dried.

► **"FISH BACK" TRAILERS ON LAKES**—A new project has been proposed to revive

package freight shipments on the Great Lakes in truck trailers lashed to the decks of bulk ore and grain carriers. Sponsors—visualizing a cargo potential of 800,000 tons a year—believe shipment costs between New York and Duluth via Buffalo will be cut from \$1.30 per cwt. by rail to \$1.10 per cwt. in carload lots, and from about \$2 to \$1.50 for LCL shipments.

► **"FORGET THE EXTRAS"**—A softening market for specialty steels is reported by the purchasing agent for a big east coast aircraft firm. While there is no actual price cutting by the mills, they are taking a more lenient approach to "extras". Formerly, the P.A. had to pay \$1.35 more per cwt. for a special beveled edge. With steel orders showing no sign of improvement, the mill salesman recently told the P.A. to "forget about the extra charge."

► **MAIL ORDER PRICES CUT**—The nation's two largest mail order houses—Sears, Roebuck & Co. and Montgomery Ward & Co.—are talking price cuts on their new lines. Ward dropped the price of 20,000 items in its midsummer sales catalog an average price of 13 per cent, effective immediately. And Sears in a round-about statement implied that it too would be cutting prices.



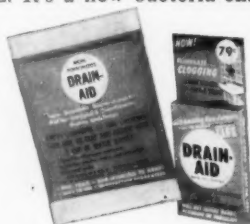
Thurston P. Blodgett

QUOTE!

Business may remain on a low plateau for at least seven months after the recession ends, says Thurston P. Blodgett, vice-president of Tri-Continental Corp. In an analysis of the current economic situation, Mr. Blodgett points out that "no two periods are alike, but it would appear that the 1953-54 situation was more conducive to early recovery than the present one. . . . Since business in the 1953-54 period required seven months of stabilization after the sharp decline had terminated . . . we probably can expect business activity to remain at a lower level at least as long or probably longer after the current decline terminates . . ."

Look what paper is doing now:

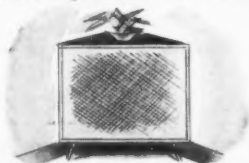
- * Friendly bacteria
- * Precious moments in color
- * Hi-Fi's pear-shaped tones
- * Now you can un-clog drains with no splash or strain, thanks to Drain-Aid. It's a new bacteria-enzyme



formula, protected by Riegel's Pouchpak*... a special pouch paper laminated to foil, then printed and polyethylene coated. A packaging idea here for your products? *T.M.

* **Precious moments** recorded on color photographic film are preserved in paper photomounts. Made of a special Riegel heat-seal-coated paper that is strong and rigid, and die-cuts cleanly.

* **Voice coils** for hi-fi speakers call for unusual precision in materials.

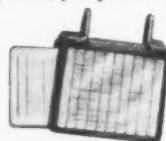


That's why James B. Lansing Sound chose a special Riegel insulating paper. Riegel's closely controlled strength, stability, moisture resistance and dielectric properties help preserve true pear-shaped tones.

* **Paper made of glass or nylon**... paper that holds water but lets air pass... paper you can't tear... these are also examples of Riegel's ability to make paper for almost any industrial need. Whenever you have a paper problem, write to Riegel Paper Corporation, P.O. Box 250, New York 16.

- * Traps sludge on the run
- * Whips up cookie appetite
- * Keeps precision rust-free

* **Riegel's resin-impregnated Battery Separator Paper** has two important jobs to do: Keep sludge off the battery plates, yet permit easy flow



of the electrolyte through the cell. Closely controlled porosity makes the difference. Riegel can tailor-make similar resin-impregnated papers to your exact specifications, for jobs from oil filters to cafeteria trays.

* **Keeping Burry's deluxe cookies** tasting just as good out of the box as out of the oven is a job for Riegel's waxed glassine inner liner. And the eye-appeal of this white liner, printed



in gold, is enough to set anybody's appetite awlirl. Just one more of hundreds of today's best selling foods protected by Riegel.

* **Rust, dust, and factory crust** mean ruination for expensive metal parts like bearings, gages, and precision pins. There's no problem, though, if you wrap them with Riegel's Non-Corrosive Glassine, a heat-sealing, polyethylene-coated paper that is strong and pliable. It's only one of 600 different Riegel papers. Have you a problem that may be solved by a better paper? Just write to Riegel Paper Corporation, P. O. Box 250, New York 16, N. Y.

- * Paper holds the flavor
- * New weatherproof paper
- * New York underground

* **Betty Crocker's Macaroon Mix** relies on a special Riegel waxed glassine to hold its tasty freshness and flavor. Hundreds of tailor-made



Riegel papers... many of them new laminates of paper, polyethylene and foil... are now boosting repeat sales for the country's leading foods.

* **"No Hunting" signs**... and hunters' licenses too... are no good if they collapse in mid-season. To stand all weather and abuse, they are printed on Riegel's tough Weatherproof Bristol. Every fiber is treated to repel water, give high wet strength. Good for all outdoor signs and tags.

* **Interlacing New York City's underground** are more than 5000 miles of big high voltage electrical cable. Almost every mile of this cable is insulated by paper... a specially



purified, flexible, durable paper that is wound layer on layer around the copper conductors and encased in lead sheathing. It's only one of 600 different grades of Riegel paper.

* **If one of our 600 papers** doesn't fit your needs, we can almost always develop one that does. Write to Riegel Paper Corporation, P.O. Box 250, New York 16, N. Y.

Now...what can we do for you!

Riegel

TECHNICAL PAPERS FOR INDUSTRY

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The market is weak and there's no indication of a pickup. Tool builders' business may be off 40 per cent this year, so P. A.'s are in a position to make some good capital equipment buys.



Machine Tools

THE OUTLOOK for purchasing agents in the market for machine tools is as good as it has been since the Korean War.

With machine tool salesmen beating the drums harder than ever for new bookings, the P.A. is in the driver's seat. And although new orders picked up slightly during the first two months this year, total sales are slated to drop almost 40 per cent in 1958.

Here's the background behind the current machine tool slump:

(1) New orders for metal cutting types of machine tools dipped 44 per cent last year to \$519.8 million from \$924 million in 1956. This was the second lowest figure in eight years—only the recession year of 1954, when new orders totaled \$515 million was lower. Just about every machine tool builder con-

cedes that new business this year will drop even further, with most of the predictions ranging somewhere around the \$475 million level.

(2) Shipments in 1957 declined slightly to \$843.9 million from the previous year's \$886.2 million. This made last year's shipment level the second lowest since 1952. In addition, the drop-off was even more severe in the second half of the year when only 42 per cent of the year's total shipments were delivered.

For the current year, tool builders are talking in terms of \$500 million in shipments. This amounts to approximately half the industry's production capacity. The Business & Defense Services Administration, however, is even more pessimistic. Its forecast: \$400 million.

(3) Machine tool backlogs were virtually chopped in half last year, dropping from 6 months in January '57 to 3.1 months at the end of the year. With backlogs now down to 2.9 months there's a good chance that before the year is out, builders will be shipping only as much as they can book.

What are some of the other reasons P.A.'s can call the tune in today's tool market?

● One is lack of orders from the auto industry, a major buyer of a great variety of cutting tools. While toolmen say inquiries are increasing, there haven't been many firm orders as yet. There is talk about fall orders for retooling equipment for transmission and engine changes in the 1960 models, but realistic tool manufacturers don't see any large-scale pro-

Precision Rings

with little or no machining

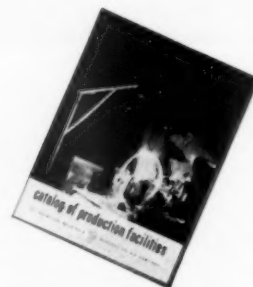


Today you can purchase precision flash butt-welded rings that require little or no machining to meet your specifications. Made from bar stock of finished gauge, they can be produced to meet the same tolerances as conventionally machined rings. Cost of production and materials of some rings has been reduced as much as 60%. Sizes and materials at present are limited to those bar stocks which can be furnished to precise finished dimensions. However, persistent efforts of American Welding engineers and the producers of finished bars give promise of a widening range of sizes and metals that can be manufactured by precision forming and welding.

This is another example of why you should call American Welding first — if the problem is circular and of metal.

New Products Catalog

Write today for 20-page catalog of circular products which American Welding can form, weld and machine for you.



AMERICAN WELDING

THE AMERICAN WELDING & MANUFACTURING CO.
460 DIETZ ROAD • WARREN, OHIO

Special Industry Report:

gram in the works at the present time.

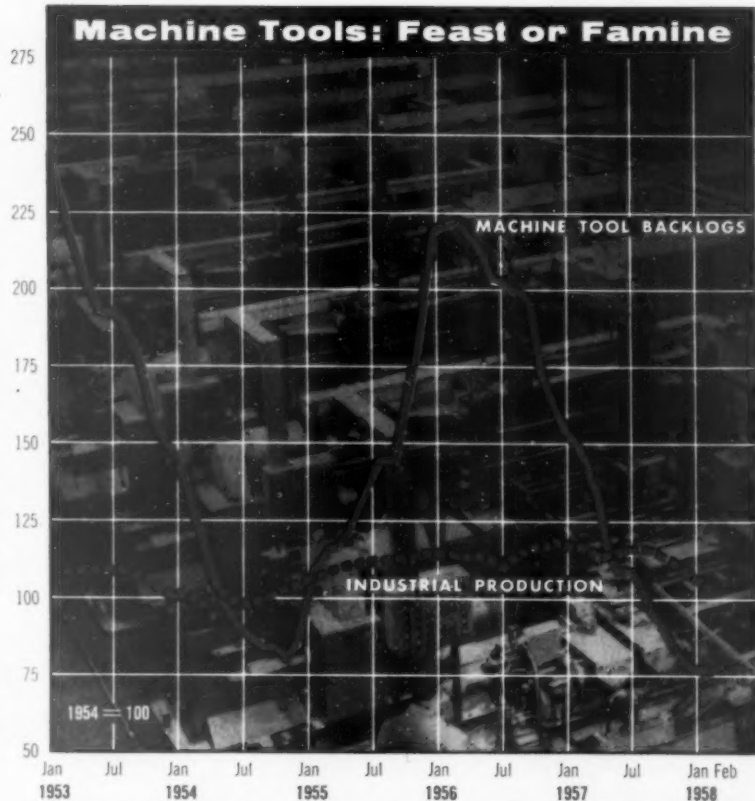
- Another major market that has tool builders discouraged is the aircraft industry. Cancellations and stretchouts of government aviation contracts knocked the wind out of many sails in the machine tool business last year.

- The import-export situation also worries the industry. Domestic tool builders are faced with the double problem of increased imports and declining exports. Despite a 15 to 20 per cent tariff on imported machinery, lower wage rates overseas make it possible for foreign producers to compete quite successfully in the U. S. In fact, they're stepping up their sales program in this country because of slipping backlogs at home.

Many foreign machine tool manufacturers also have the added advantage of owning extremely efficient plants, since a large number had to be rebuilt after World War II. They also are protected in their own countries by licensing or trade barriers against U.S. companies. Our own exports, which used to represent 30 per cent of our total output, are now down to about 10 per cent. As a result, toolmen are being hit with a one-two punch and can offer little defense against the attack.

- Of course, the recession is hurting tool builders too. It's no news that cutbacks in capital goods expenditures have been one of the big factors behind the business slump. Since the majority of machine tools are custom built—at an average price last year of \$15,726—that's just the kind of item businessmen are scratching off their "must have" lists.

Despite the softness of the machine tool market, the chance that P.A.'s may have to cope with a slight price hike in machine tools this summer is not



Machine tool backlogs, an advance business indicator, fluctuate widely over the years, compared with the relatively steady production index.

entirely out of the question. Even though buyer resistance is high and some sales may be made under "list", tool builders don't see how they can afford even to hold the line on prices much less cut them. Among the items that make a price hike seem likely are increased labor costs and higher price tags on raw materials.

Labor Costs Up

Although there have been layoffs (many machine tool plants are now on a three or four day week) the wage rate for the industry's highly skilled workers continues to rise. Both wages and fringes were hiked last year and unions are due to demand the same again in 1958. Even though some machine tool companies sliced salaries of ex-

ecutives and supervisors, this hasn't done too much to keep payroll costs down.

Steel also has some effect on toolmakers' pricing policies. With another steel price hike possible in July, there will just be that much more pressure on tool builders' profit margins.

For the purchasing agent, it means that now is a good time to buy if he knows that his company is going to need new machine tools within the next eight months or a year. In many cases, persuading top management to make a major capital investment will be difficult, but the P.A. who can do it stands a chance of being able to take a bow for smart purchasing next year when the market picture may be beginning to change.

people
buy
Scott Towels
for
many
reasons:



Mr. A. W. Hix, C&O's Vice President—Purchases and Stores, says

**"For long-run economy, the C&O buys
Scott quality in carload lots!"**

The Chesapeake & Ohio Railway Company *never* misses an opportunity to provide finer service to passengers. Quality standards here are very high indeed. As Mr. Hix says: "Scott quality is a recognized fact. We buy Scott products because they're good . . . have had nothing but compliments since we began using Scott." (And that's been many years ago!) In the end, Mr. Hix adds, Scott Towels give the C&O real economy over the long haul because of the "lower usage" factor.



Find your Scott distributor in the Yellow Pages, under "Paper Towels." And be sure to enjoy "Father Knows Best" on NBC-TV.

Scott UHA Towels

Scott Multifold Towels
Scott Tissue

Scott Singlefold Towels

C-12518

Purchasing Previews

Regional Roundup

A Silver Lining Develops

A few bright spots show up on the generally gray picture in the New England area. A rise in machine tool orders is giving a fillip to a fairly important segment of industry, and also helping sentiment is the stability of the electronics field, now a vital part of the area's economy. An early Easter provided a seasonal stimulus to retail sales.

A sign of things to come: several companies, including General Electric, picked up \$80 million worth of defense contracts.

Consumer prices, as measured by government indices, are at a new high; but businessmen here stress that these figures do not reflect concessions from list prices—a fairly common practice in this area.

Construction, outside of the burgeoning highway program, is dragging its feet in contrast with the lively tempo of business a year ago.



Levelling of Decline Seen

The decline of business and employment in the mid-Atlantic area shows signs of levelling off. Some steel plants have called back workers to fill small orders, retail sales scored more than seasonal increases and new claims for unemployment compensation have dropped. Many workers who were furloughed appear to be not unduly distressed and look forward to returning to their jobs soon.

However, bankers here note that people are getting along with what they have, rather than making new purchases. And, since this is primarily an industrial area, durable goods production still remains the key to its economic health.



Where Are The Robins?

The spring upturn here, forecast by the more sanguine, hasn't arrived yet in the Southeast. Many business leaders feel that a lot of the trouble in the region's economy is psychological. Although savings by individuals are at a record high, few consumers plan to tap bank accounts for anything that's not a real necessity.

Building permits are impressive, particularly in Atlanta and Miami. Large companies all over the area are going forward with expansion plans. Farm dissatisfaction remains, however, despite better prices. Wet weather has held back plowing and messages for help in starting the new season are being beamed to Congress. But the word is out, spread by the flood of recession news from Washington, that this is a time for caution.





MOLDED CASE CIRCUIT BREAKERS



"Our new automated masonry cement plant is protected against costly shutdowns with I-T-E circuit breakers"

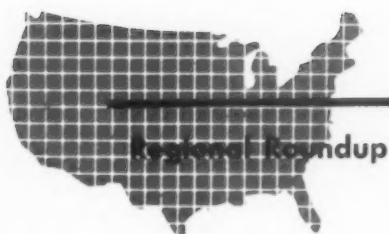
"Since momentary motor overloads can occur in our particular installation, we chose circuit breakers to eliminate the possibility of costly and unwarranted outages," says John R. Allen, designer and project engineer for G. & W. H. Corson's unique new masonry cement plant. "Circuit breakers do, of course, provide complete protection for our motors against actual faults, including protection against single phasing." The Corson Company, America's oldest lime manufacturer, and held in high regard

by engineers for its many developments in the lime industry, appreciates the products and services which I-T-E provides. We think you will too, and, like all who choose I-T-E Molded Case Circuit Breakers, you will appreciate the "extra quality—at no extra cost" which is built into all I-T-E products. Contact your local I-T-E Distributor, or write I-T-E Circuit Breaker Co., Small Air Circuit Breaker Division, 19th & Hamilton Sts., Phila. 30, Pa. In Canada: Eastern Power Devices Ltd., Port Credit, Ont.



I-T-E CIRCUIT BREAKER COMPANY
PHILADELPHIA, PENNSYLVANIA

For More Information Write No. 163 on Inquiry Card—Page 32



Purchasing Previews

Industry Fights Recession

There are definite indications that a business pickup may be in the offing in the Midwest. Along this line, at least one paper company has noted that requests for immediate deliveries indicate that inventory reduction has reached a point where an upturn in new orders should begin within the next two months.

Some firms here have already received substantial orders. Link-Belt Co. was awarded a multi-million dollar contract to design, build and erect a large coal preparation plant at Clinchfield, Va. Looking towards the opening of the St. Lawrence Seaway and the corresponding industrial growth of this region, Bethlehem Steel purchased 4500 acres in an Indiana port area for a \$35 million expansion program. Youngstown Sheet & Tube Co., too, recently started construction on a sintering plant so that it can make use of low-grade iron ore.



Crude Oil Production, Price Dropping

Oil floats a good part of the Southwest's economy, and both production and price of crude continues to sink. State boards set record lows for allowable production. The government's move to ask for more voluntary cuts in oil importing draws cries of "too little and too late" from oilmen. The result: a big drag on the rest of the region's economy.

In contrast to this gloomy outlook, other businesses still figure on spring upturns, recovery by summer. An example is the Southern Pine industry, dragging along at about the same pace as last year. Mill owners count on a housing boomlet from loosened credit this year, expect to get better prices for their product as the season advances. While heavy manufacturing languishes, makers of other items from paint to frozen seafood report good business.



California, Northwest Spotty

The West is taking another, closer look at the recession. While there is no doubt that urban areas are hard hit, rural districts are feeling less squeeze.

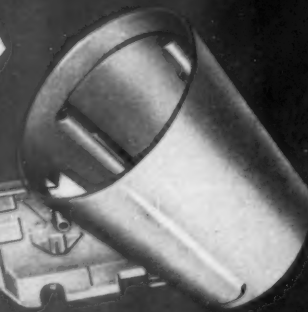
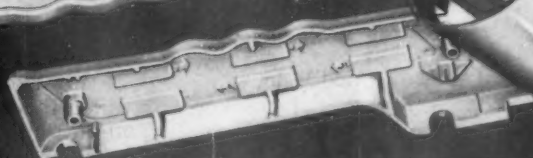
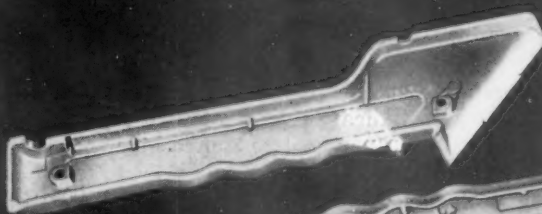
A good omen: the long awaited defense contracts are now trickling through to manufacturers here. Army Ordnance recently awarded a \$3 million missile contract to California firms, and over \$60 million more has been announced for shipbuilding, electronic component and aircraft firms.

Northwestern industry is still spotty. Pacific Northwest Alloy reopened its Spokane plant to produce low carbon ferrochrome. Lumber, on the other hand, is still down almost 15 per cent from last year. Pulp business has been down from 1957, but by-product sales are showing strong gains, wiping out some of the drop.



University

produces a powerful
but very compact
soundcaster by using
DIE CASTING



CASE HISTORIES FROM MT. VERNON FILES

In this model PP-2 Pistolgrip "Powrpage," University has embodied the most advanced features of any electric sound-casting system. Aim, press, talk—it projects clear, powerful sound in any direction. A mighty voice for such a compact, light weight unit, only 4½ pounds including batteries. The Pistolgrip with microphone built into the horn base permits ready, one hand use. 6 pencil batteries are all held in the slim handle which also contains the "Powersaver" press-to-talk switches and—the entire unit is *weatherproof* throughout.

How was such compact design achieved... by resorting to die casting which gives thin, rigid sections of great strength.

How was weight brought down to 4½ pounds... by die casting three main parts in aluminum.

How was cost held down to lowest figures possible... by utilizing all the inherent advantages of die casting to make the intricate shapes economically. The two-casting handle houses microphone, driver unit and power supply and the tone arm com-

bines an outer shell with four spacer arms and an inner sound director core into one unit.

How was it made so weatherproof... because die castings can be held to extremely tight tolerances.

You too can realize the many advantages of die casting by using the complete service available from Mt. Vernon's coordinated designing, die-making, casting and machining facilities all under one roof, which can supply die cast zinc and aluminum parts ready for use. Contact your nearest Mt. Vernon sales representative for action.



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GUILDERLAND, N. Y.: Mr. David H. King, 75 Willow St.
LUTHERVILLE, MD.: Mr. C. McIntosh Gordon, Mays Chapel Rd.
CLEVELAND, OHIO: Mr. Grant Eller, 6 East 194th St.
BROOKLYN, N. Y.: Mr. Robert V. Moore, 2317 Plumb 2nd St.

EAST ORANGE, N. J.: Mr. George E. Hahl, 37 So. Munn Ave.
ROCHESTER, N. Y.: Mr. William Sauers, 101 Briarcliff Rd.
SKANEATELES, N. Y.: Mr. Jerome J. Theobald, 9 E. Genesee St.
BALA-CYNWYD, PA.: Mr. G. T. McMaster, Llanberris Apts. C-1
BOSTON, MASS.: Mr. James Cleary, 61 Exeter Street

PURCHASING OPINION

Is the INVENTORY RECESSION OVER?

One of the main causes of the current business slump has been the sharp cut-back in industrial inventories. Purchasing agents are in a position—both to know and to help formulate—their own company's inventory policies. To find out about the latest trend in this important segment of the economy, and to get an idea of what will happen to inventories during the rest of 1958, we surveyed a representative cross-section of purchasing executives. Their combined answers:

1. Do you believe the major cut-backs that have been made in industrial inventories are now at an end? In other words, are present inventories in balance with production schedules?

Yes



65%

No



35%

2. Has your company established a definite policy for inventory reduction?

Yes



74%

No



26%

Is this inventory reduction policy still in effect?

Yes



90%

No



10%

3. In what way has the size of your inventories changed in the last 12 months?

Decreased



66%

Increased

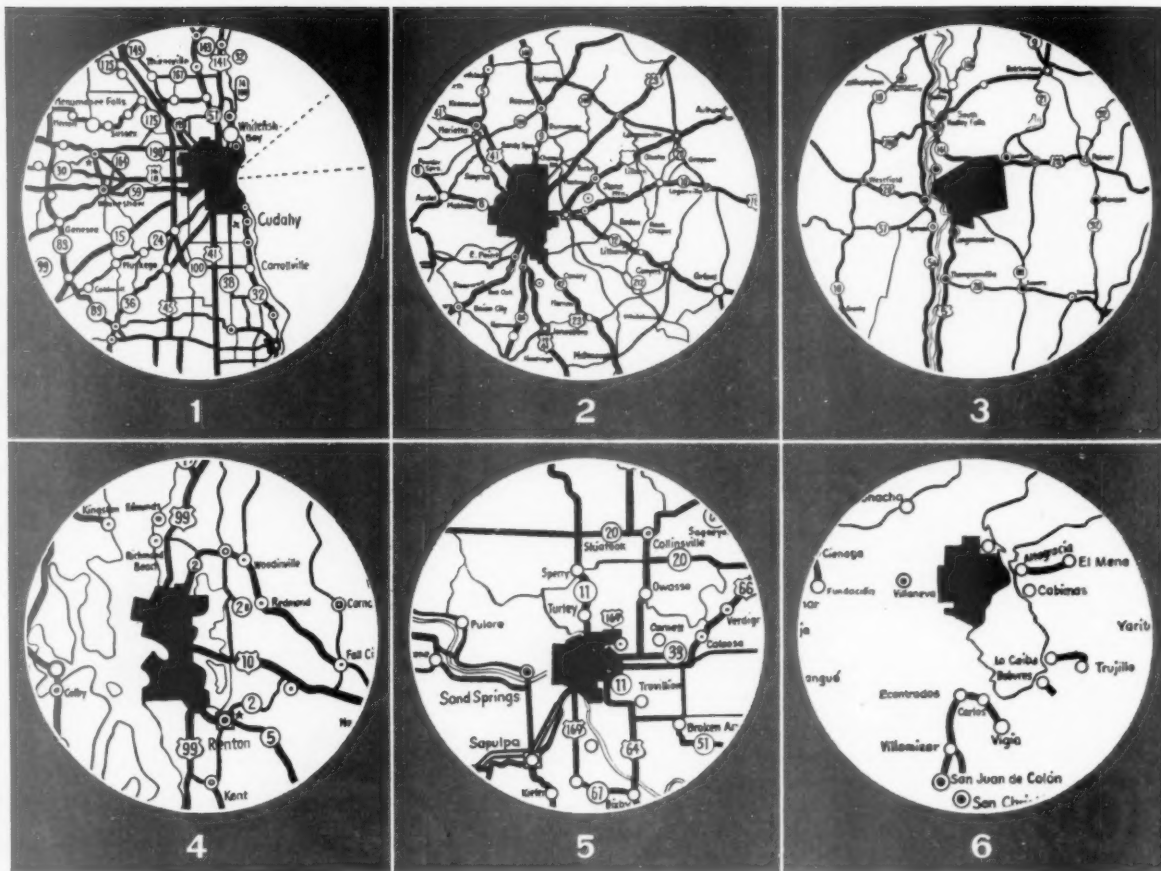


19%

No Change



15%



Where are we?

How's your geography? Can you spot where you are on the maps? If you're a little rusty, you'll find the answers listed in the box at the right.

The point of this geographical guessing game is to illustrate that there's no guesswork involved in locating where we—CHAIN Belt Company—are located. In all the cities illustrated on the map sections above, you will find either a CHAIN Belt plant, warehouse, sales office or distributor. You will find them, too, in every principal city throughout the United States and the world...a strategically located network of trained specialists within easy reach of your requirements. We're as close as your telephone directory!

Your local CHAIN BELT man or distributor is ready to help you with your problems involving chains, sprockets, roller bearings, bucket elevators, belt idlers, flexible couplings. CHAIN Belt Co., 4670 W. Greenfield Ave., Milwaukee 1, Wis.

Where We Are!

- 1 Milwaukee
- 2 Atlanta
- 3 Springfield, Mass.
- 4 Seattle
- 5 Tulsa
- 6 Maracaibo, Venezuela

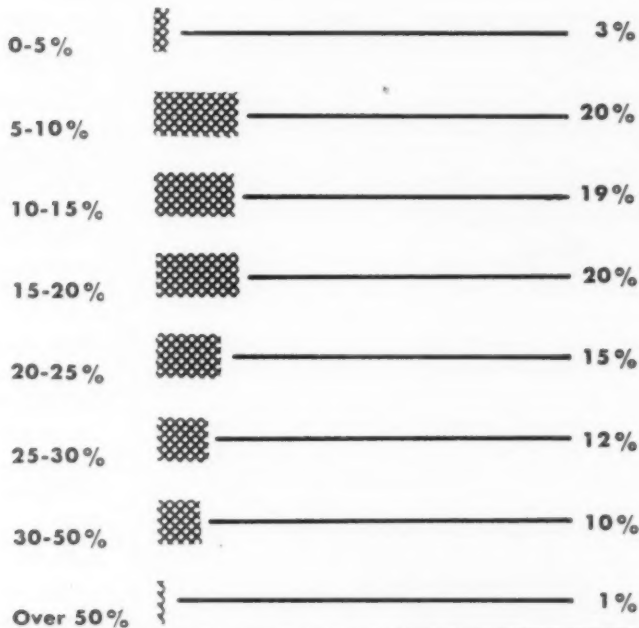
CHAIN BELT

For More Information Write No. 165 on Inquiry Card—Page 32

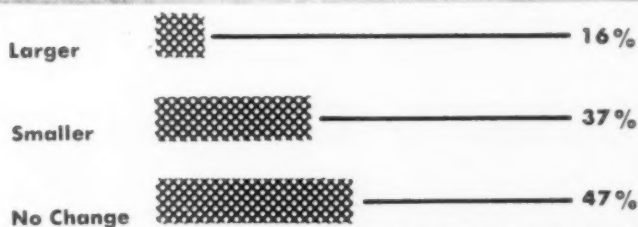
Purchasing Opinion

Amount of Inventory Cutback

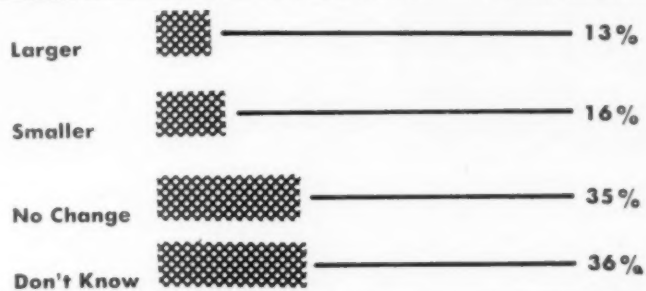
4. If your inventories have decreased during the last year, how severe has the cutback been?



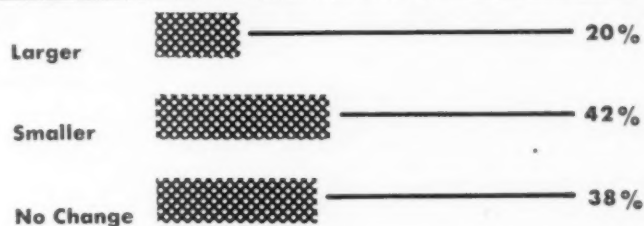
5. During the next three months do you believe your company's inventories will be larger, smaller or the same?



6. During the next three months do you believe the inventories of your major suppliers will be larger, smaller or the same?



7. During the rest of 1958, do you believe that industrial inventories will generally be larger, smaller or the same?



What's the worst



*What you
should know
about testing of
Union Boxes*

You might try dropping it (filled) on a metal floor . . . compressing it . . . bouncing it in a revolving drum.

These are just a few of the ordeals corrugated board and boxes undergo before the finished container is delivered to your plant. No single one is "worst" or "best", or will give a true measure of *overall* performance. Yet each is uniquely important.

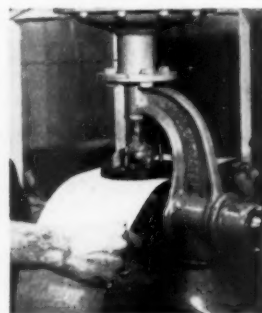
Some of these tests, made on Union Board and Boxes, are described here. They represent another part of Union's structural design service to all shippers.

1. Shock treatment

During rail or truck shipment, your box must be able to withstand the shocks of sudden stops and turns. To measure its impact resistance, filled box is shot down an inclined runway and bounced against a solid backstop.



1. Impact test



2. Mullen test

punishment you can give a box?

2. The bursting "barometer"

A railroad ride can be rough experience. That's why boxes shipped this way must meet minimum standards for bursting strength of board as set by Freight Classification Rule 41. If they pass this trial, known as the Mullen Test, they're ready for the worst jolts and jerks.

3. Testing for tear

Box flaps are scored to make them fold and unfold easily at your plant and at final destination. The easier the better. But during scoring some strength at that point must be lost. How much, and how much is retained, is measured by the combined Torsion-Tear Test.

4. "Squeeze-box" hazard

Whatever your product it will be subjected to all sorts of pressures on all sides during shipment and storage. The Compression

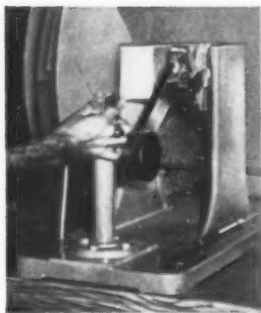
Tester anticipates these forces. It squeezes empty box till collapse to test for rigidity and stacking strength . . . helps weed out possible trouble sources such as poor adhesion, scoring, joints and corrugations.

5. Down she goes!

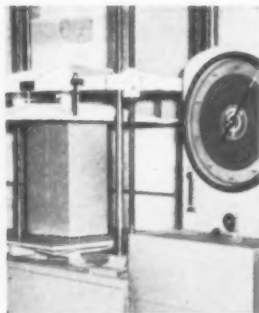
Bad falls are among the commonest causes of failure. The Drop Test—repeated flat-on-face and corner drops of loaded box on to a metal surface—provides a real gauge of the box's resistance to sudden shocks. Test also checks suitability of tape and strength of manufacturer's joints.

6. Taking a tumble

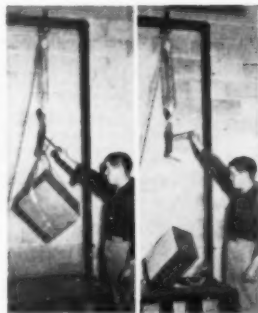
It takes a tough box to survive the Drum Test's "black-and-blue" treatment. Drum rotates, box inside tumbles against fixed metal obstacles until it finally fails. Test is an excellent gauge of the durability of facings, flutes, seams and interior packing.



3. Torsion-Tear test



4. Compression test



5. Drop test



6. Drum test



Write for new, informative booklet, "Quality Control of Corrugated Boxes."

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Western Division—4545 W. Palmer, Chicago, Ill.

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For More Information Write No. 167 on Inquiry Card—Page 32

Washington Report

Aluminum Price Cut Weakens Market Outlook for Other Materials

DROP IN aluminum price by two cents a pound is one of the most significant developments in the current business cycle.

Importance of the price action is that it raises some immediate question as to what the steel industry will do in July when wage increases will raise steel-making costs substantially. Steelmakers may forego some of the price increase that has been anticipated.

For purchasing agents, the current recession has been most puzzling. Business has been off, but prices have stayed firm—even increased.

Now an aluminum price drop, after an uninterrupted history of gradually rising prices, raises a question as to whether price cuts will follow on other materials.

Cement producers announce that they plan to hold the line on prices. This is another area where an increase appeared certain.

There is considerable pressure coming from official sources—taking the form of friendly advice to the steel industry—to go easy on a steel price increase in mid-year.

Change in Supply Outlook?

An important sidelight on the decision by aluminum producers to drop their price is that for the first time in history, the Russians have come into the market with aluminum priced below market. It was the Russian action in offering aluminum at one and two cents below the going market price in Britain that probably touched off the price cuts in Canada and the U.S.

As a result of the Soviet aluminum maneuver concern is increasing about Russian competition in other materials. If the Russians choose to compete with the West in supplying the world with materials, it could have the effect



Announcing a 2¢ a pound price cut on primary aluminum, Alcoa VP Donovan Wilmot said he did not think the price reduction would result in an immediate pickup in aluminum demand.

of suddenly enlarging the sources for basic materials.

It is not believed that the Soviets can quickly become big world suppliers, but with their technique of spotting their competition in strategic materials and in specific markets, the Soviets can play hob with orderly marketing by Western producers.

• Time Running Out on Anti-Recession Action

Government policy is still one of wait-and-see—but the waiting time is getting short. By the end of this month, if the economy does not show a decisive change, Congress will scamper off with a variety of panaceas.

So far government action has been in three areas. First of these has been money management on a piece-meal basis. There have been successive actions to make money cheaper—to make it easier to borrow. Critics say that the



Meeting with President Eisenhower, ample Ludwig Erhard, West German economics minister, known for his fair-weather economic forecasts, predicted that the U. S. recession would be of short duration.



Shop out-of-town markets by telephone

Out-of-town markets are as close as your telephone. It helps you keep track of current prices, buy goods and supplies at the right time, in the right quantity. You shop to best advantage, keep inventories low, through the speed of purchasing by telephone.

And the personal discussion with distant suppliers makes

friends for you and your company and helps you settle details smoothly.

Pick up the telephone the next time you have an out-of-town purchasing problem. It's fast, personal, low in cost. And you will get results.

BELL TELEPHONE SYSTEM

Call by Number. It's Twice as Fast



LONG DISTANCE RATES ARE LOW

Daytime Station-to-Station Calls

For example:	First 3 Minutes	Each Added Minute
Boston to Hartford	55¢	15¢
New York to Washington, D.C.	80¢	20¢
Detroit to Chicago	90¢	25¢
Los Angeles to Phoenix	\$1.10	30¢
Pittsburgh to Miami	\$1.20	45¢

Add 10% Federal Excise Tax

Washington Report

Federal Reserve System has been too timid. Instead of little by little, money should have been thrown on the market in massive action.

Second area of government action has been in spending policy. This has helped to change the direction of business, especially in defense industry, but has done little to fill the empty spaces in civilian industry.

Third action has been in public works. Here the showing will be for the future. Very few of the stepped-up public works programs will reach the earth-moving stage in the current construction season.

And unemployment continues to be a sensitive economic sore. A total of 5 million unemployed was expected—indeed forecast—but this was anticipated as a matter of short duration. Now the level has crept up—possibly near the 6 million mark.

The Administration does not deserve all the blame, however. The White House has not had a clearly defined anti-recession package to offer—but neither have the Democrats.

What Will Happen?

What happens if the piece-meal actions already taken aren't strong enough to halt the recession? There are all kinds of bills in the Congressional hopper—many of them on the "crackpot" side.

Best forecast at the present stage is that from the many bills already introduced, there will be a bi-partisan effort to work out a pattern of legislation which will be as sound as possible. Keep in mind the upcoming Congressional election, and that the pressures will be building up for action, with little time to consider implications beyond the voting when November rolls around.

If the number of jobless hits the six million mark, a tax cut is almost certain. Some lip service legislation favoring small business is another form of legislation that is likely if the pressures of a recession build up.

For the purchasing agent, the implications are clear—actions

taken under the political gun, are likely to over-correct the recession, and this inevitably means inflation.

• States Scramble for Defense Business

Washington is taking on an increasing air of urgency—with the public and, to some degree, industry looking on government as the prime mover in pulling us out of the recession.

Initial efforts by the Government have centered around a massive public works program—and a sharp step-up in military buying.

Recognizing these efforts, industry has shown an increasing interest in military business. State Governments have been on the lookout to get as much of the Federal Government money for industry located in their state limits as they can.

Rhode Island has just set up a representative in Washington, whose job it will be to try and prime the pumps in Providence and other R.I. cities which have a high level of unemployment.

Spread the Business

Other states have been doing the same thing in varying degrees. The Rhode Island office will not only contact government agencies to see if more defense dollars can't be spent in the state—but will also maintain a listing of plant facilities and subcontracting possibilities.

For the military purchasing agencies, the heat will be on to "spread the business". Obviously, the military cannot direct the prime contractor on where to place his subcontracts—but effort will be made to persuade primes to buy where their procurement dollars will help ease unemployment the most.

Also beginning to crop up is a rebirth of the wartime trend under which a number of smaller companies pooled their facilities and resources and went after prime contracts. (Turn Page).

For brass and
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beat
Fischer
for
precision,
price and
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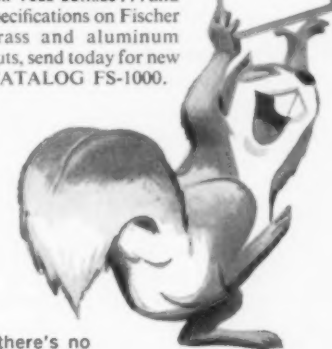
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MASS PRODUCTION FACILITIES

... including unique high-speed machinery... assure prompt delivery and competitive prices.

FOR FULL DETAILS... and specifications on Fischer brass and aluminum nuts, send today for new CATALOG FS-1000.



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Please send me your new 20-page
CATALOG FS-1000 describing
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Street _____
City _____ Zone _____ State _____
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"Fewer Production Rejects" "Fewer Lamp Burnouts"

Since BASO RELAMPED with LUSTRA



Mr. J. F. STEINER, the Lustra Lighting Specialist, who services Baso Inc., Milwaukee, Wisc., manufacturers of gas heating specialties.



High levels of lighting intensity, with a minimum of glare, are maintained in this manufacturing area at Baso Inc. through the use of LUSTRA Lamps, which have been installed throughout all the company's 3 plants.



MR. VERN WODA, Maintenance Foreman, reports on the Lustra advantages with which he has been particularly impressed.



MR. FRED JENS, Baso's Assistant Purchasing Agent, tells why he likes to deal with Lustra for his lighting needs.

"Keeping production up and rejects down is naturally one of my prime concerns — and here at Baso we know the way to our objective is through better lighting conditions for our employees. With Lustra JadeLites, Warm Whites and other Lustra lamps selected for the job, we get lots of light with very little glare. Our employees have fewer headaches, less eyestrain. They work better—and we all benefit."

"Buying lamps in large quantities to fill all the fixtures at our 3 big plants, we certainly keep a close eye on replacement costs. Over the last 4 years, we've been relamping entirely with Lustra, because we have found that lamp life is longer, burnouts fewer. Of course, we also appreciate the helpful suggestions we have had from the Lustra Lighting Specialist — and the excellent delivery service he always gives."

Plant after plant reports similar advantages through the use of Lustra Lighting. It will pay YOU to get the facts on the complete Lustra line for every lighting requirement: Double Duty Incandescent and Fluorescent Lamps, Hi-Bay Reflector Lamps, Weather-proof Spotlights and Floodlights, Rough Service and Vibration Service Types, Industrial Infra-Reds, Fluorescent Fixtures.

*Lustra Lamps are **GUARANTEED** for extra-long burning life. Find out how our **GUARANTEE** on our **DATED** Lamps assures this long burning life. **SEND** for complete descriptive literature.

Lustra Corporation, Dept. P4 36 Washington Street, Brooklyn 1, N. Y.

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Washington Report

• You Can't Win on Reciprocal Trade Act

Fate of Reciprocal Trade Act will be decided in next several weeks, when House Ways and Means Committee pieces together what its members believe to be provisions that the full membership of the Congress will sanction.

The basic problem is that the Reciprocal Trade Act has come to mean a lowering of tariffs. Timing for the legislation is unfortunate. Coming as it does in the midst of a recession, "buy American" and protectionist sentiment is growing. However, our whole foreign policy and system of military alliances hinge on a fairly elastic trading policy with encouragement for foreign producers.

What the Administration would like is a long-term extension of the Act, and considerable latitude in adjusting tariffs. Most likely outcome, however, is a fairly short-term extension of the Act, and further safeguards to protect U.S.-made goods.

For P.A.'s, foreign sources have varied in importance depending on the item. Lower tariffs obviously mean cheaper prices for the import, and price pressure on U.S. producers making the same item.

Significantly, while Western Europe has been putting on a real drive to expand its dollar earnings, the volume of imports from Europe in capital equipment and industrial supplies has not increased substantially.

• Did Industry Expand Too Much, Too Soon?

New plant and equipment spending this year is now expected to be 13 per cent below last year's level—a drop of \$5 billion in spending. General attitude in government is that the capital equipment boom of the last three years went too far—too fast. Thinking is that as a result capital spending could drift at lower figures for a year or 18 months.

—A. N. Weeksler



Industry's No. 1 choice... the V-Belt with concave sides

Here's the reason:
the concave sides of Gates V-Belts
insure far longer belt life.

Make this simple test. Bend a Gates V-Belt with concave sides (Fig. 1) as if it were going around a sheave. Feel how the sides *fill out*... become perfectly straight (Fig. 1-A). Note how this belt makes full contact with the sides of a sheave... grips the sheave evenly, distributing wear uniformly across the sides of the belt. Uniform wear lengthens belt life — keeps costs down.

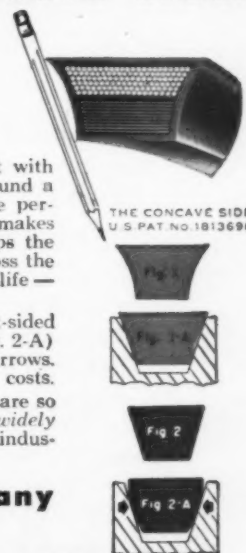
Now make the same test with a straight-sided belt (Fig. 2). Feel how the sides bulge out, (Fig. 2-A) concentrating wear at the points shown by arrows. Uneven wear shortens belt life; increases belt costs.

Because Gates V-Belts with concave sides are so universally preferred, they are also the most widely available. There are Gates distributor stocks in industrial centers throughout the world.

The Gates Rubber Company

Denver, Colorado

World's Largest Maker of V-Belts

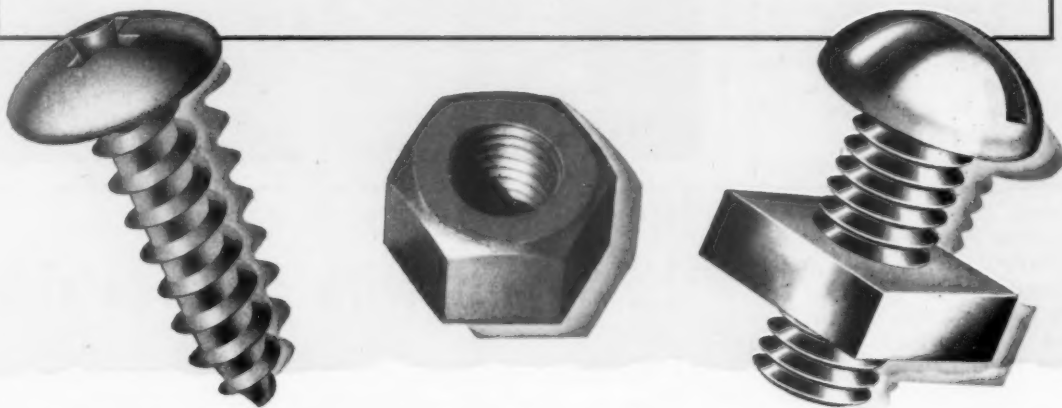


Gates VULCO ROPE Drives

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NOW...LAMSON helps you
run your production lines with minimum
fastener inventory!



Here's a new money-saving idea for high-production plants: Keep production lines supplied uninterruptedly, with less inventory, by buying bolts and nuts in accordance with current needs direct from Lamson & Sessions' tremendous factory stock.

This "buy as you need" plan eliminates the extra expense of stocking large fastener inventories. Lamson's modern, new Cleveland, Birmingham and Chicago plants have the extra production, stocking and shipping facilities to assure immediate, fast shipment on most standard fasteners.

Check on this money-saving plan. Get in touch with Lamson & Sessions today.

Lamson & Sessions makes the most complete line of fasteners in the industry.

The LAMSON & SESSIONS Co.

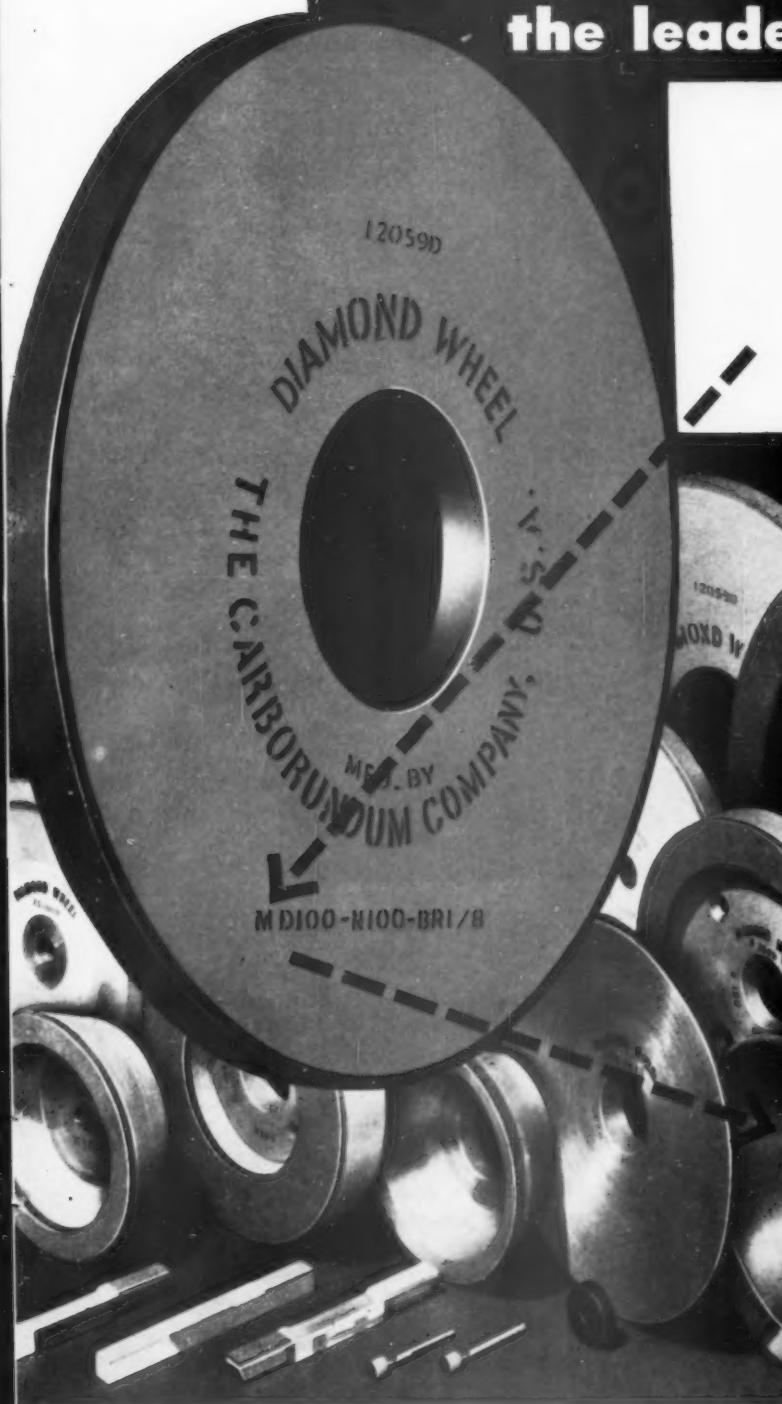
5000 TIEDEMAN ROAD, CLEVELAND 9, OHIO • PLANTS AT CLEVELAND AND KENT, OHIO • CHICAGO • BIRMINGHAM



For More Information Write No. 172 on Inquiry Card—Page 32
30

For More Information Write No. 253 on Inquiry Card—Page 32→
PURCHASING

the leader adds an



SO...CARBORUNDUM HAS ADDED AN "M"...MAN-MADE DIAMONDS

When you see an "M" prefix on a Diamond Wheel by CARBORUNDUM, you'll know the diamonds are Man-Made. We have been hard at work for two years perfecting their application. We know what they can do. You owe it to yourself to find out. **TEAR OUT** and mail the **COUPON**. Do it **TODAY!**

THE CARBORUNDUM COMPANY is proud to announce the addition of **MAN-MADE** industrial diamonds to its already outstanding line of Diamond Wheels. For many years CARBORUNDUM has been recognized as the leader in the development and manufacture of Diamond Wheels and Hones. Constant close liaison with world-wide diamond markets and vigilant exhaustive research and development have kept the CARBORUNDUM line out in front. Due to very recent developments by American industry and science, no line of industrial products is now complete without **MAN-MADE** diamonds.

THE CARBORUNDUM COMPANY, Dept. "M"
P. O. Box 403, Niagara Falls, New York

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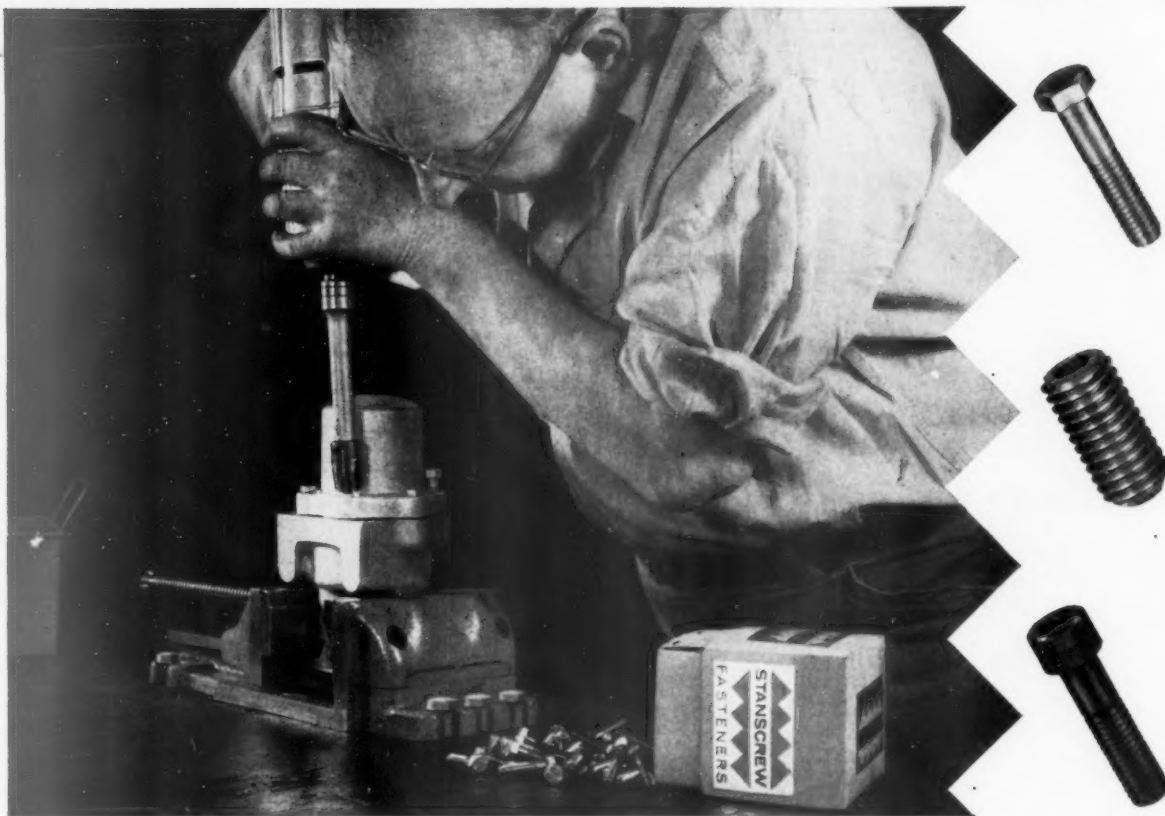
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Ask the man from

CARBORUNDUM

Special Service for Reader

IT PAYS TO STANDARDIZE ON STANSCREW



Stanscrew service cuts rejects, speeds assembly for valve manufacturer

A prominent manufacturer of 4-way valves for freon was having trouble on his assembly line. His fasteners, tightened to an extreme degree to prevent seepage of the gas, were breaking on too many occasions. This meant complications in assembly and a high reject rate—which increased production costs substantially.

One of Stanscrew's fastener specialists, called in by a Stanscrew distributor, quickly found the answer. He recommended a standard cap screw and had staff engineers work out the precise torque which should be applied to insure a complete seal at all gaskets, yet eliminate any possibility of fastener breakage. By follow-

ing these recommendations, the manufacturer has eliminated the problem of fastener breakage, and substantially reduced his reject rate.

Stanscrew offers over 4,000 standard fasteners . . . including a complete selection of socket, set, and cap screws. All are produced under rigid quality control methods and incorporate the lessons learned during 85 years of fastener manufacture. All 4,000 are always in stock and quickly available.

For the answer to your fastener problem, call your Stanscrew distributor. He will have a Stanscrew fastener specialist promptly study your operation and make specific recommendations.



STANDARD SCREW COMPANY

FASTENERS

CHICAGO | THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS

HMS | HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT

WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

2701 Washington Boulevard, Bellwood, Illinois

For More Information Write No. 173 on Inquiry Card—Page 32

33

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STANSCREW FASTENERS

CHICAGO | THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS

HMS | HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT

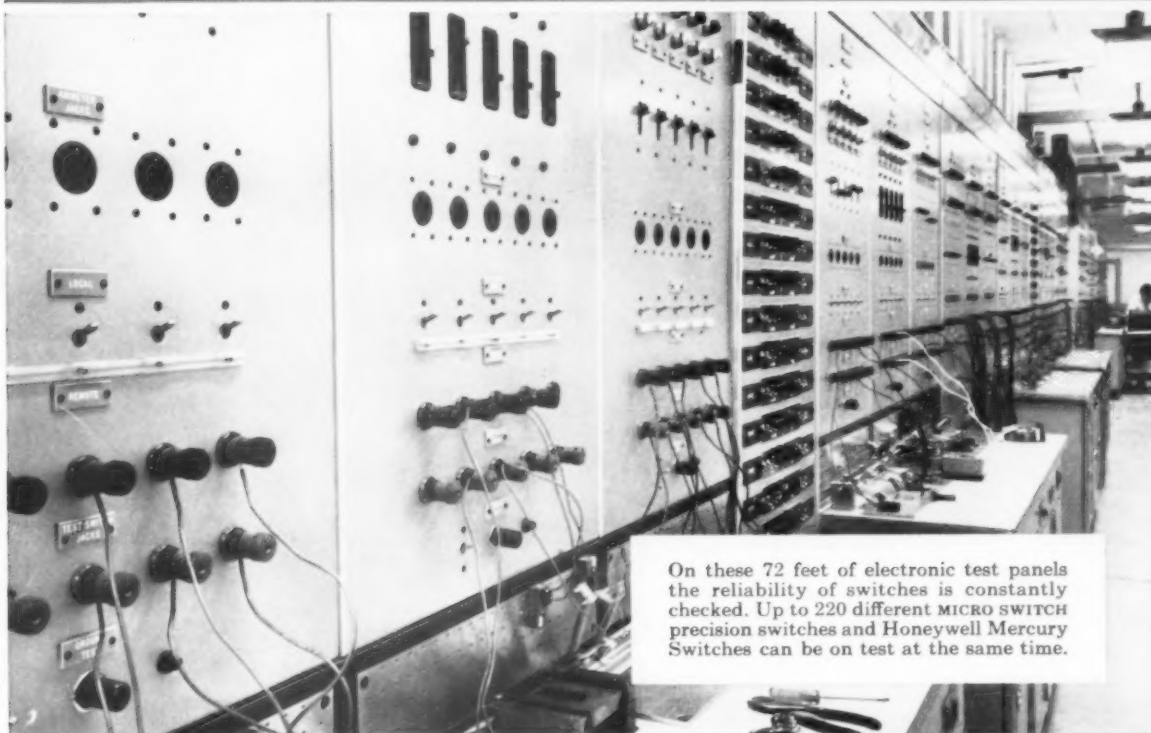
WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

STANDARD SCREW COMPANY 2701 Washington Boulevard, Bellwood, Illinois

For More Information Write No. 173 on Inquiry Card—Page 32



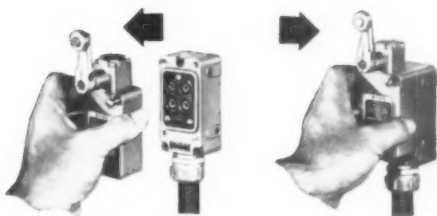
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On these 72 feet of electronic test panels the reliability of switches is constantly checked. Up to 220 different MICRO SWITCH precision switches and Honeywell Mercury Switches can be on test at the same time.

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This
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is a **NEW** concept
... Downtime reduced
to **20** seconds!



PULL OUT

PLUG IN

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is NOT a generic term. It is the name of
a division of Minneapolis-Honeywell
Regulator Company.

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... that for 20 years MICRO SWITCH has been first in the development, design and production of precision switches.

... that during its life, MICRO SWITCH has produced hundreds of millions of precision switches. Over 10,000 variations are available to meet industry's broad requirements.

... that MICRO SWITCH's plants and development laboratories are equipped with superlative scientific tools for painstaking precision, quality control and necessary testing techniques to assure the high reliability required today.

... that, in other words, is why MICRO SWITCH knows what should be done!

... that MICRO SWITCH field engineering offices and hundreds of Authorized Distributors blanket the country. There is always a MICRO SWITCH man near you.

... that ten catalogs containing full technical data for every series of switches are available to purchasing directors. A request will bring you as many sets as your department requires.

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A DIVISION OF MINNEAPOLIS-HONEYWELL REGULATOR COMPANY

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First in Precision Switching



During 1957 the diamonds processed by Norton for industrial purposes were far greater,

How diamonds... *become Industry's*



List Price \$32,540 — and well worth it! This Norton diamond wheel, built for a prominent ceramics manufacturer, precision-grinds extremely hard parts. Its ability to last so much longer and grind so much better than other wheels more than justifies its first cost.

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Norton makes these smallest diamond wheels, together with every other size and type required for surface or cylindrical grinding, sharpening, sawing or cutting-off. And each wheel has the long-lasting excellence that assures the user steady profits.



in number and in total carat weight, than were available as gem diamonds in the U. S.

mined or man-made...

Crown Jewels

This leadership, firmly established by producing the finest cutting diamond wheels, began when only natural diamonds, known as bort, were available for industrial use. In 1930, Norton was first in this country to make, and in 1934 first to sell, successfully developed bonded diamond wheels.

And today, similar pioneering by Norton is assured in the processing of grinding wheels using diamonds, mined or man-made. That is why Norton diamond wheels continue to live up to their long-established reputations for exceptional value.

And that is why they are recognized as the *Crown Jewels* of industry — not only for familiar grinding operations on carbides, ceramics, stone and glass, but for solving the grinding problems of new metals, alloys and materials. Your Norton

Abrasive Engineer or Norton Distributor will be glad to give you prompt service and additional facts about diamond wheels. Or write to NORTON COMPANY, General Offices, Worcester 6, Mass. Plants and distributors all around the world.



NORTON PRODUCTS

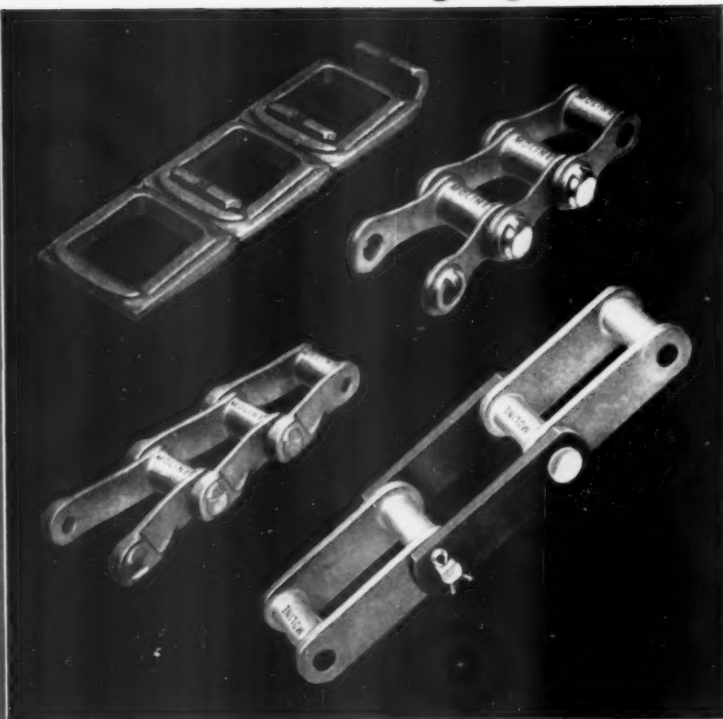
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BEHR-MANNING DIVISION
Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes

Making better products...to make your products better

Moline link attachments adapt Moline Chains to many jobs

STANDARD ATTACHMENTS

Only a few of the wide variety of Moline Chain attachments are shown here.



Conveying and Elevating

THERE IS NO LIMIT to the number of jobs which can be handled by Moline Chains. With the wide variety of standard link attachments available, the possibilities for adaptation are endless. Both right and left hand types are made to the exact size and pitch of the regular chain links.

With Moline Chain, equipped with standard attachments, you can push, pull, scrape, elevate and carry an endless variety of materials and objects.

At the same time you can cut your overall chain costs because Moline Chains and attachments are engineered for maximum efficiency... trouble-free performance... and long life. Only Moline Chains are triple-tested to guarantee maximum quality control.

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MALLEABLE
Chains

Specializing in the
manufacture of chains

LEADER
FOR
60 YEARS

MOLINE MALLEABLE IRON COMPANY
St. Charles, Illinois

new streamliner program... 2-day Formica shipments



Now you can count on 2-day shipment of standard grades of laminated plastics from the new Formica Streamliner stocks. You'll get faster shipment of all standard grades thanks to new inventories of "treated," or semi-processed materials which have now been set up. Twenty-five "special purpose" grades—now offered for the first time—offer new design opportunities.

Your additional new grade requirements will be met through expanded research and development facilities now available—including Formica's new resin research laboratories and resin processing plant. Write for free copies of the new Streamliner folder and Stock List-Price List. Formica Corporation, subsidiary of American Cyanamid, 4565 Spring Grove Ave., Cincinnati 32, Ohio.



Application Engineering
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the complete laminated plastics service



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One will get you 8

One outline drawing or templet is all you need to cut 8 pieces—simultaneously—with the Air Reduction No. 50 TRAVOGRAPH Gas Cutting Machine.

Equally important, since it runs on rails, the No. 50 TRAVOGRAPH can cut individual shapes of unlimited length up to 12 feet wide. And cuts are accurate, so that little or no finishing is needed.

The No. 50 TRAVOGRAPH motorized torch holder

adapters provide compound angle settings. The Multi-Bevel Unit prepares plate edges with precise single or double bevels, with or without lands. Tracers are electronic, manual, magnetic or spindle. High speed or standard cutting tips for the No. 50 TRAVOGRAPH are available for any fuel gas you prefer.

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For More Information Write No. 178 on Inquiry Card—Page 32
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For More Information Write No. 179 on Inquiry Card—Page 32—
PURCHASING



The unusually large broach produced for a heavy equipment builder is given careful final inspection by Continental Tool engineers before shipment.

Ever seen a broach this big before?

HERE'S HOW IT WAS MADE— AND WHY

It takes a large tool to broach accurate involute splines in an 8.040" diameter by 4.750" long hole in one pass in a steel part.

Yet that's exactly what the mammoth broach shown above is doing today for a major producer of heavy earth-moving equipment. Its size alone — 8"-plus diameter by 74" length—makes it one of the largest of its kind ever produced by Ex-Cell-O's Con-

tinental Tool Works. To make it, required a series of critical manufacturing operations highlighted by the hardening process applied to the shell main body.

One more example of how Continental engineers, plant personnel and facilities team to deliver broaches tailored to meet manufacturers' requirements. Perhaps you have a specific problem you'd like to discuss with them. Simply call your local Ex-Cell-O representative—the service costs you nothing, of course.

Continental



TOOL WORKS
DIVISION OF EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN



Can this still go out tonight, Mr. Trumbull?

Certainly can, Miss Davis. As soon as I put this Safetex in the dispenser.

Just be sure it's wrapped tight!

We haven't had a package pop open yet, Miss Davis.

In the mailroom or in the shipping department, Safetex *meets* exacting requirements because it's *made* to exacting requirements. The Safetex glue coating, you see, is AccuRay controlled at the one peak level, where sticking speed and holding power are greatest. Cuts application costs—increases efficiency. Order and see!

SAFETEX SUPERSTANDARD GUMMED TAPE 

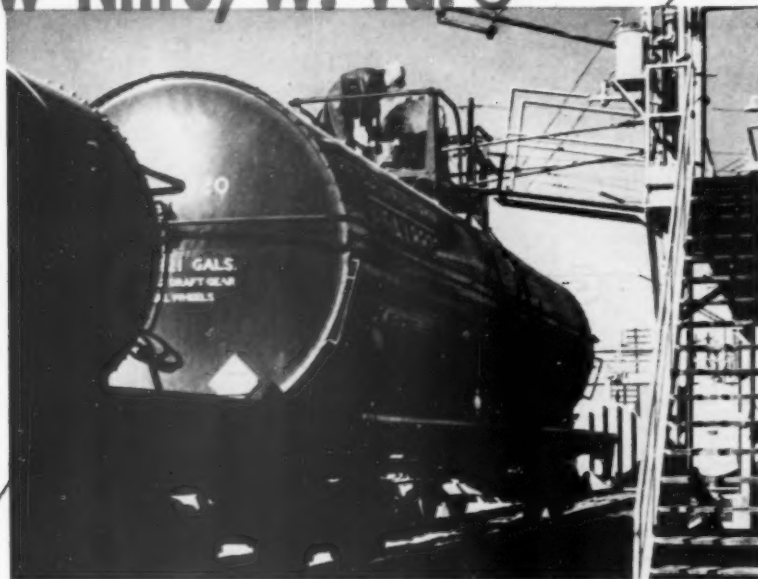
CENTRAL PAPER COMPANY • MENASHA, WISCONSIN

For More Information Write No. 180 on Inquiry Card—Page 32

General Chemical announces its THIRD HF PLANT!

Now Nitro, W. Va. ③

① MARCUS HOOK, PA.



Make General Chemical your HQ for HF!

② BATON ROUGE, LA.

Construction is now underway for General Chemical's third hydrofluoric acid plant. Producing both aqueous and anhydrous acid, it will augment the company's already extensive HF capacity at Baton Rouge, La., and Marcus Hook, Pa.—and assure ample reserves to meet industry's needs for the foreseeable future.

Your Most Dependable Source of Supply for HF

General Chemical is the *only* supplier offering shipment from more than one producing location. In addition, it has five HF stock points

at Buffalo, N. Y., Chicago, Ill., Cleveland, O., El Segundo, Calif. (Los Angeles), and Pittsburgh, Pa.

Also important to you is General Chemical's integrated raw materials position—your best protection against interruptions of supply. General owns and operates its own fluorspar mines and mills, and sulfuric acid plants. These, together with multiple, high-capacity HF plants, plus strict quality control all along the line, make *General* your most dependable source of supply for hydrofluoric acid.

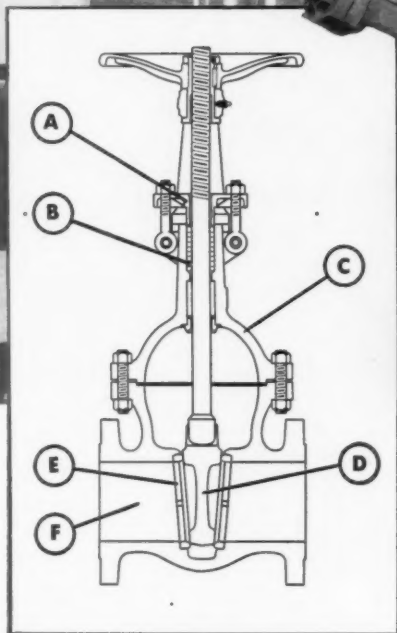
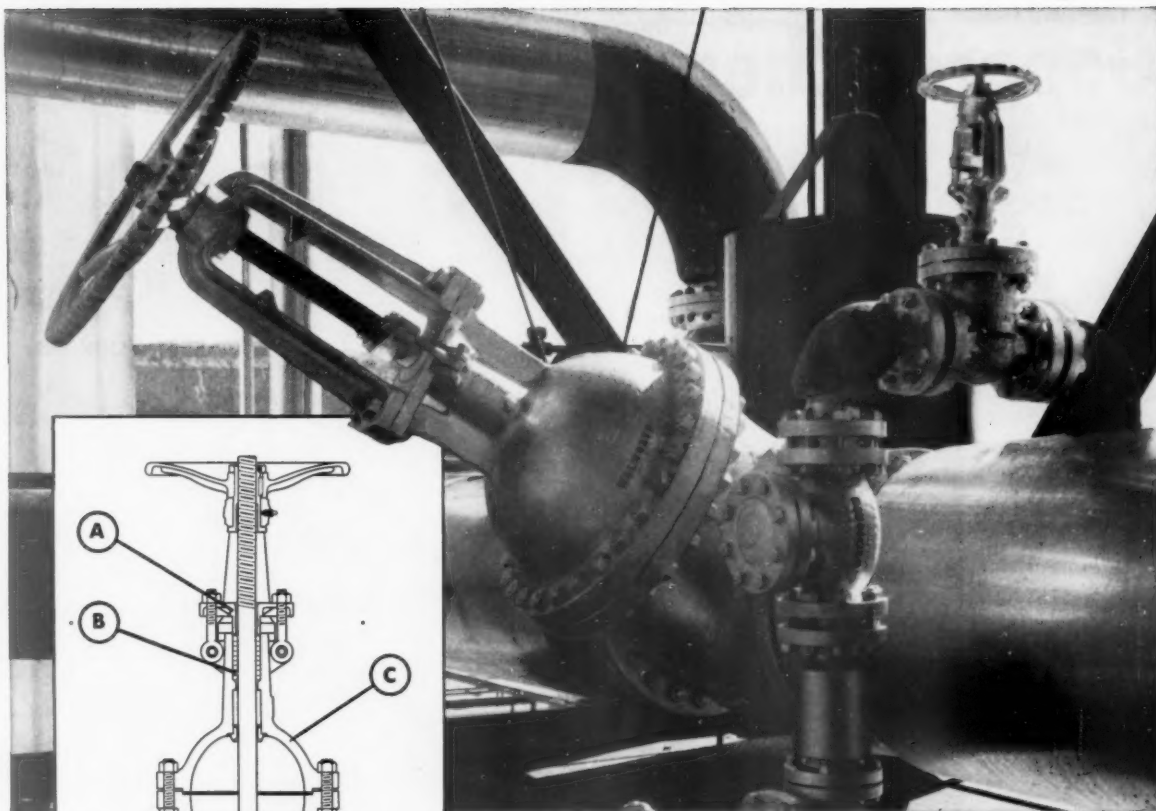
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GENERAL CHEMICAL DIVISION

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Walworth Series 150 and 300 CAST STEEL GATE VALVES OFFER YOU THESE FEATURES for 'round-the-plant service

(A) GLANDS: Clearances between the gland and stuffing box, and gland and stem, are such that the stem cannot be scored even if the gland is pulled down unevenly.

(B) DEEP STUFFING BOXES: More than adequate in all sizes (2" to 24") to assure tightness and maximum packing life.

(C) BONNETS AND BODIES: Engineered to exceed the requirements of all applicable codes and standards. They are tough, durable, dependable.

(D) INTEGRAL GUIDE RIB FACES IN BODY: Machined to insure accurate centering of the gate.

(E) STURDY SEAT RINGS: Bottom-seated so that no

recess exists at the back of the ring to cause turbulence, erosion and pressure drop.

(F) STREAMLINED PORTS: Permit unobstructed flow which results in minimum pressure drop and reduces the possibility of erosion.

Walworth Cast Steel Gate Valves can be furnished with either flanged ends or butt welding ends. Roller bearing yokes are available on the larger sizes. On valves 4 inches and larger, by-passes can be furnished. Walworth Cast Steel Gate, Globe and Check Valves from Series 150 to 2500, are available. For Series 600 and higher, we recommend Walworth Pressure Seal Cast Steel Valves. See your Walworth Distributor or write to Walworth for complete information.

WALWORTH

750 Third Avenue, New York 17, New York

SUBSIDIARIES:  **ALOYCO ALLOY STEEL PRODUCTS CO.**  **CONOFLOW CORPORATION**  **M & H VALVE & FITTINGS CO.**
 **SOUTHWEST FABRICATING & WELDING CO., INC.**  **WALWORTH COMPANY OF CANADA, LTD.**

For More Information Write No. 182 on Inquiry Card—Page 32
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PURCHASING

PRODUCTS ACTUAL SIZE

make

FASTEX

your source for

*STAMPED
PARTS*

... volume

Metal stampings can be made to your specifications by Fastex. Here is the right combination of skilled talent and machines to produce competitively, in high volume, stamped parts of the simplest or most complex kind. Illustrated are examples of stampings produced by Fastex for the automotive, appliance and other mass-production industries.

... quality

Fully integrated manufacturing facilities—including complete die-making and sample shops, high-production metal stamping equipment, and modern heat-treating and plating facilities—assures the strictest control of quality.

... competitively
priced

Prices are established to give you continuing benefits from engineering and methods know-how. At Fastex you benefit from cost-saving techniques stemming from Illinois Tool Works' service to industry for nearly 50 years.

For service, quality, price—make Fastex your source for stamped parts.

send us your part
or print

Include a description of its use, quantity requirements. We will forward a firm quotation to you quickly.



Precision tools are built in the Fastex completely equipped die shop.



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DIVISION OF ILLINOIS TOOL WORKS

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**STRONGER
and SAFER
for every
high pressure
pipeline
duty...**

**...because
they are
drop forged**

**by
Vogt**



Send for Catalog F-9



OTHER VOGT PRODUCTS

Drop Forged Steel Valves —
Petroleum Refinery and Chemical
Plant Equipment — Steam
Generators — Heat Exchangers —
Ice Making and
Refrigerating Equipment.

Constantly imitated but never duplicated, Vogt drop forged steel fittings and flanges have unmatched strength and toughness for your most severe pipeline duties. Laboratory controlled materials and Vogt's special forging techniques assure products which are always uniform in structure, fine grained, and free from porosity. Thereby the shocks and stresses imposed by high pressures and high temperatures are easily withstood, and with stubborn resistance to erosion and corrosion. Consult Catalog F-9 for our complete line of fittings and flanges.

For a copy of Vogt Catalog F-9 address Dept. 24A-FPM.

HENRY VOGT MACHINE CO., P.O. BOX 1918, LOUISVILLE 1, KENTUCKY

SALES OFFICES: New York, Chicago, Cleveland, Dallas, Philadelphia,
St. Louis, Charleston, W. Va., Cincinnati

Vogt

DROP FORGED STEEL

**Fittings
and Flanges**

Information For Your Catalog Files

ALUMINUM

Chart Sec. G, No. 1, gives aluminum Government specifications and helpful hints on bending and forming aluminum sheet and plate. Chart data is condensed in tabular form for easy use.

Peter A. Frasse & Co., Inc.

Write No. 1 on Inquiry Card—Page 32

BARREL PROCESSING

A pocket size, 28-page manual discusses compounds for barrel processing. It gives process information on 11 topics with numerous case histories. Typical equipment is illustrated.

Magnuson Products Corp.

Write No. 2 on Inquiry Card—Page 32

BLOWER UNITS

Performance characteristics and dimensions of Vari-Basic blower units in #916, #1020 and #1220 sizes are published in a 6-page technical bulletin. It gives data on static pressure, etc.

The Torrington Mfg. Co.

Write No. 3 on Inquiry Card—Page 32

BUSHINGS

A pocket-size plastics slide-rule selector enables prospective buyers to order Acme or A.S.A. standard bushings without aid of a catalog. It gives sizes of 30,000 drill bushings.

Acme Industrial Co.

Write No. 4 on Inquiry Card—Page 32

CHUCKS

Catalog No. PO-65C lists, with prices, a full line of air-operated chucks, cylinders and accessory equipment. Applications of various types are supplied with operating features.

The Cushman Chuck Co.

Write No. 5 on Inquiry Card—Page 32

CHUCKS, COLLETS

A 23-page, 2-color catalog, Form 1117-C supplies information on chucking equipment for metal-working industries. A section on special work-holding equipment shows job applications.

Gisholt Machine Co.

Write No. 6 on Inquiry Card—Page 32

CONTROL EQUIPMENT

Detailed information, technical data and prices on all types of automatic electrical control equipment are contained in a 64-page brochure. It covers transfer switches, contactors, etc.

Zenith Electric Co.

Write No. 7 on Inquiry Card—Page 32

CONTROL SYSTEM (TAPE)

A 12-page, 8½ x 11", 2-color, illustrated catalog, No. BR 1, describes the new tape control system for the production of machined parts. Economies from the system are discussed.

Bendix Aviation Corp.

Write No. 8 on Inquiry Card—Page 32

CUTTING TOOLS

The 2-color, 24-page catalog, No. 12 gives full specifications of a line of cutting tools ground from solid carbide. Included are reamers, end mills, die sinking cutters, etc.

Dixie Tool Industries, Inc.

Write No. 9 on Inquiry Card—Page 32

DISTRIBUTION EQUIPMENT

Low-voltage distribution and components are the subject of the 144-page catalog, GEC-1032B. It contains data on various type switches, circuit breakers, panelboards, busways, etc.

General Electric Co.

Write No. 10 on Inquiry Card—Page 32

DRIVES

A complete line of all-steel, helical gear, shaft mounted drives for applications ranging from ½ to 50 hp and from 450 to 5 rpm output speed forms the text of 32-page bulletin, #7100.

The Falk Corp.

Write No. 11 on Inquiry Card—Page 32

DRIVES

Selection of the most satisfactory and economical drive for a specific purpose is facilitated by this 84-page catalog, No. 100. Charts for speed reducers and gears make choice easy.

Charles Bond Co.

Write No. 12 on Inquiry Card—Page 32

Information For Your Catalog Files

ELECTRONIC PARTS

A 216-page catalog carries detailed listings of electronic parts for service, industrial and public address applications, as well as high fidelity and amateur fields.

Thurrow Distributors, Inc.

Write No. 13 on Inquiry Card—Page 32

MOLDED PLASTICS

Facilities for custom molding of thermosetting plastics for industry are described, with plant photographs, in an 8-page, 2-color brochure. Photos highlight complexity of parts molded.

Insulation Mfg. Co.

Write No. 19 on Inquiry Card—Page 32

FASTENERS

Complete listings of all sizes of standard non-ferrous and stainless steel bolts, nuts, screws, rivets and washers may be found in an 84-page saddle-stitched 8½" x 11" catalog.

The H. M. Harper Co.

Write No. 14 on Inquiry Card—Page 32

NUTS, FASTENERS

A 28-page catalog on a full line of lock nuts and fasteners, includes product descriptions, illustrations, dimensions, screw tension pounds, materials, finishes and typical applications.

The Palnut Co.

Write No. 20 on Inquiry Card—Page 32

FINISHING (METAL)

A clear explanation of mechanical metal finishing processes is given in a 24-page, 4-color catalog. The process, "Roto Finish," puts precision finishing on a mass production basis.

The Roto-Finish Co.

Write No. 15 on Inquiry Card—Page 32

PATTERN MAKING

Wood and metal pattern development and production are described with profuse illustrations in a 12-page booklet. Also described are methods of developing plastic patterns for short runs.

The Motor Patterns Co.

Write No. 21 on Inquiry Card—Page 32

FLUID POWER DRIVES

Bulletin No. 10600 (32 illustrated pages) explains the advantages, operation and characteristics of "Any-Speed" fluid power drives. It illustrates them with performance curves.

The Oilgear Co.

Write No. 16 on Inquiry Card—Page 32

PRESSES (MODERNIZING)

A 16-page bulletin, No. 46, lists 42 kits available for bringing obsolete presses up to date. Kits add such features as die cushions, pneumatic friction clutches, drive shaft bearings, etc.

E. W. Bliss Co.

Write No. 22 on Inquiry Card—Page 32

HYDRAULIC TABLES

Hydraulic tables and other engineering data to aid hydraulic engineers and designers are furnished in the 40-page bulletin, No. 3300. It provides data on fluid losses, beam formulae, etc.

Baldwin-Lima Hamilton Corp.

Write No. 17 on Inquiry Card—Page 32

PUMPS

Triplex pumps, for use in industrial plants where pressures up to 20,000 psi and temperatures in excess of 500°F are needed, are dealt with in an illustrated bulletin. Ratings are given.

Kobe, Inc.

Write No. 23 on Inquiry Card—Page 32

METALLIZING (VACUUM)

The vacuum plating process, whereby a thin metallic film is deposited by evaporation and condensation under high vacuum is described in Catalog No. 780.

F. J. Stokes Corp.

Write No. 18 on Inquiry Card—Page 32

RECTIFIERS

A fully illustrated, 2-color, 32-page brochure is a guide to metallic power rectifiers, using germanium, silicon and selenium semi-conductors. Applications are described in detail.

Sel-Rex Corp.

Write No. 24 on Inquiry Card—Page 32

YOUNGSTOWN QUALITY PAVES THE WAY



*Producers of Quality
Carbon and Alloy Steels
for over Half-a-Century*

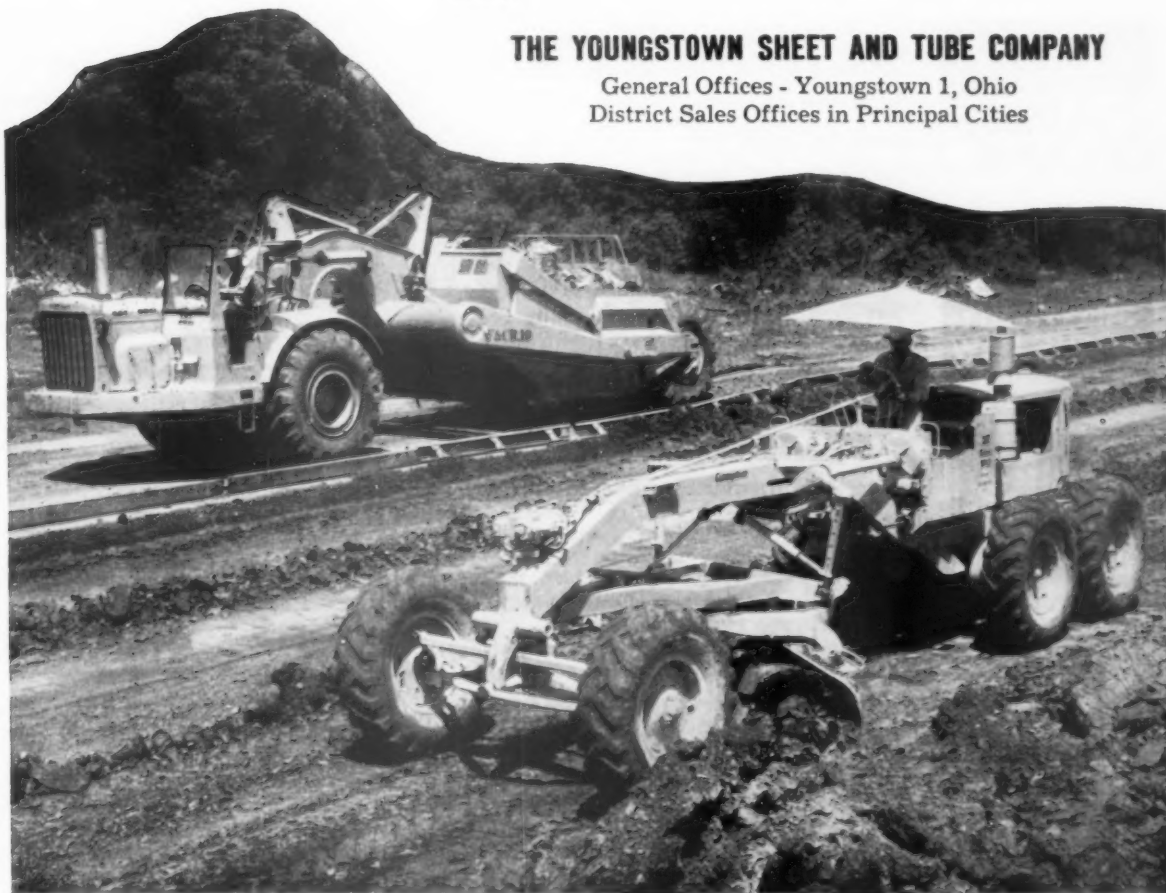
The Motor Grader and Tractor-Scraper—shown working on the site of Houston's multi-million-dollar "Shopping City of Gulf-gate", are designed for rugged service requiring tough strong steel construction.

Caterpillar Tractor Co. uses Youngstown quality steels in the construction of these powerful machines. Youngstown Alloy Steel for the gears of the steering and driving mechanisms help to provide durable, trouble free mechanical operations. Yoloy "M" Steel Plates, one of the Yoloy family of high strength steels, are used for structural strength, resistance to shock and abrasion and also for ease in forming and welding the many intricate parts in this type of fabrication.

Youngstown's Alloy and Yoloy Steels are produced in a variety of forms and qualities to meet your particular specifications. Our Service Engineers are available upon request to discuss your Alloy and High Strength steel problems—why not call them today.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

General Offices - Youngstown 1, Ohio
District Sales Offices in Principal Cities





In and around a busy plant, there are scores of places where a safety conscious or security conscious management must say KEEP OUT . . . and say it with real authority. The proper sign, from STONEHOUSE, warns trespassers or unauthorized personnel and visitors of restricted, closed or dangerous areas . . . lets them know unmistakably where they may or may not go.

Each sign is made of enduring, tested materials, and is manufactured in accordance with American Standard specifications.



Write today for our free, full-color, 64 page catalog of thousands of ready-to-ship safety signs, plus information about custom-printed signs to meet your special needs

"Signs since
1863"

Stonehouse
SIGNS

STONEHOUSE SIGNS, INC., Stonehouse Building, 9th and Larimer, Denver 4, Colorado
For More Information Write No. 189 on Inquiry Card—Page 32

Catalog Files

SPEED REDUCERS

Full details are given in a 180-page catalog on sizes, ranges and capacities of a line of speed reducers, custom and commercial gears. Eight types of worm and gear units are covered.

Grant Gear Works, Inc.

Write No. 25 on Inquiry Card—Page 32

STANDARDS

The 1723 voluntary national standards approved by the ASA are listed in a 67-page booklet. Of these, 465 are new and revised standards, not previously listed in the 1956 edition.

American Standards Association

Write No. 26 on Inquiry Card—Page 32

STEEL INDUSTRY EQUIPMENT

Products as applied to the steel and related industries are the subject of a 40-page photo-brochure, No. Q-23A. Over 100 installation photos and drawings are used.

Elliot Co.

Write No. 27 on Inquiry Card—Page 32

THERMOCOUPLE WIRES

Catalog No. 32 illustrates, according to insulation and construction, many types of thermocouple and extension wires. Listed with each type are calibration symbols.

Thermo Electric Co., Inc.

Write No. 28 on Inquiry Card—Page 32

UNIFORMS

Over 250 styles and colors of washable uniforms are illustrated and described in a multi-colored catalog. A wide choice of uniforms in extremely durable synthetic materials is included.

Angelica Uniform Co.

Write No. 29 on Inquiry Card—Page 32



When is a bargain not a bargain?

If your supplier neglects any one of nine important steps in the production of stainless steel plate his product may not be a bargain for you.

The wise buyer of stainless steel plate and plate products insists upon the solid service and sound methods of production that are identified with G. O. Carlson, Inc.

G.O. CARLSON Inc.

Stainless Steels Exclusively

130 Marshallton Road
Thorndale, Pennsylvania

District Sales Offices in Principal Cities



- Composition of each melt rigidly controlled to come well within the specification; with carbon always reported to the third decimal.

- Adequate trimming of both the hot top and butt end after the slab is rolled to guarantee sound material.

- Removal of all surface imperfections before the slab is rolled into plate.

- Annealing and rapid cooling of every chromium-nickel plate to produce material with the greatest corrosion resistance.

- Careful in-plant handling to minimize blemishes and imperfections.

- Close inspection of finished plates and the removal of minute flaws.

- Shearing, sawing, abrasive and flame cutting held to close tolerances to minimize costly machining and fitting in your plant.

- Rigid inspection of work throughout entire production cycle.

- Prompt, on-time delivery to maintain your production schedules.

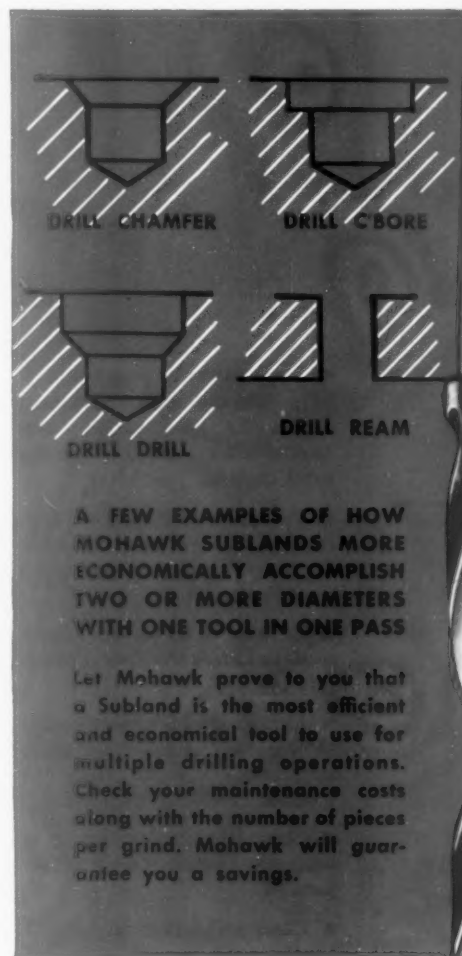
PLATES • PLATE PRODUCTS • HEADS • RINGS • CIRCLES • FLANGES • FORGINGS • BARS and SHEETS (No. 1 Finish)

APRIL 14, 1958

For More Information Write No. 186 on Inquiry Card—Page 32

49

WHY USE TWO..



DRILL CHAMFER

DRILL C'BORE

DRILL DRILL

DRILL REAM

A FEW EXAMPLES OF HOW MOHAWK SUBLANDS MORE ECONOMICALLY ACCOMPLISH TWO OR MORE DIAMETERS WITH ONE TOOL IN ONE PASS

Let Mohawk prove to you that a Subland is the most efficient and economical tool to use for multiple drilling operations. Check your maintenance costs along with the number of pieces per grind. Mohawk will guarantee you a savings.

WHEN ONE WILL DO!

Why use two—or more standard twist drills to accomplish a multiple diameter cavity when *one* Mohawk Subland tool will do the job in *one* pass... and, do it more efficiently, accurately and economically!

Why overload yourself with an assorted inventory of ordinary drills when you can save time, money and equipment by combining your requirements in a few versatile, accurate Mohawk Subland tools.

One Mohawk Subland tool will outwork and outlast dozens of ordinary drills. Because Sublands are infinitely accurate and they can be repeatedly reground (in your shop) without losing their concentricity.

Examine your hole costs, then see for yourself how many places a Mohawk Subland could easily and effectively handle the job and reduce your hole costs all along the line.

**Normal Delivery on
MOHAWK SUBLANDS
Size Optional - 14 Days
from receipt of order!**

Write... Wire... Phone Today

and let a Mohawk engineer prove just how easy it is to save your time—money and tools through the use of Mohawk Sublands.



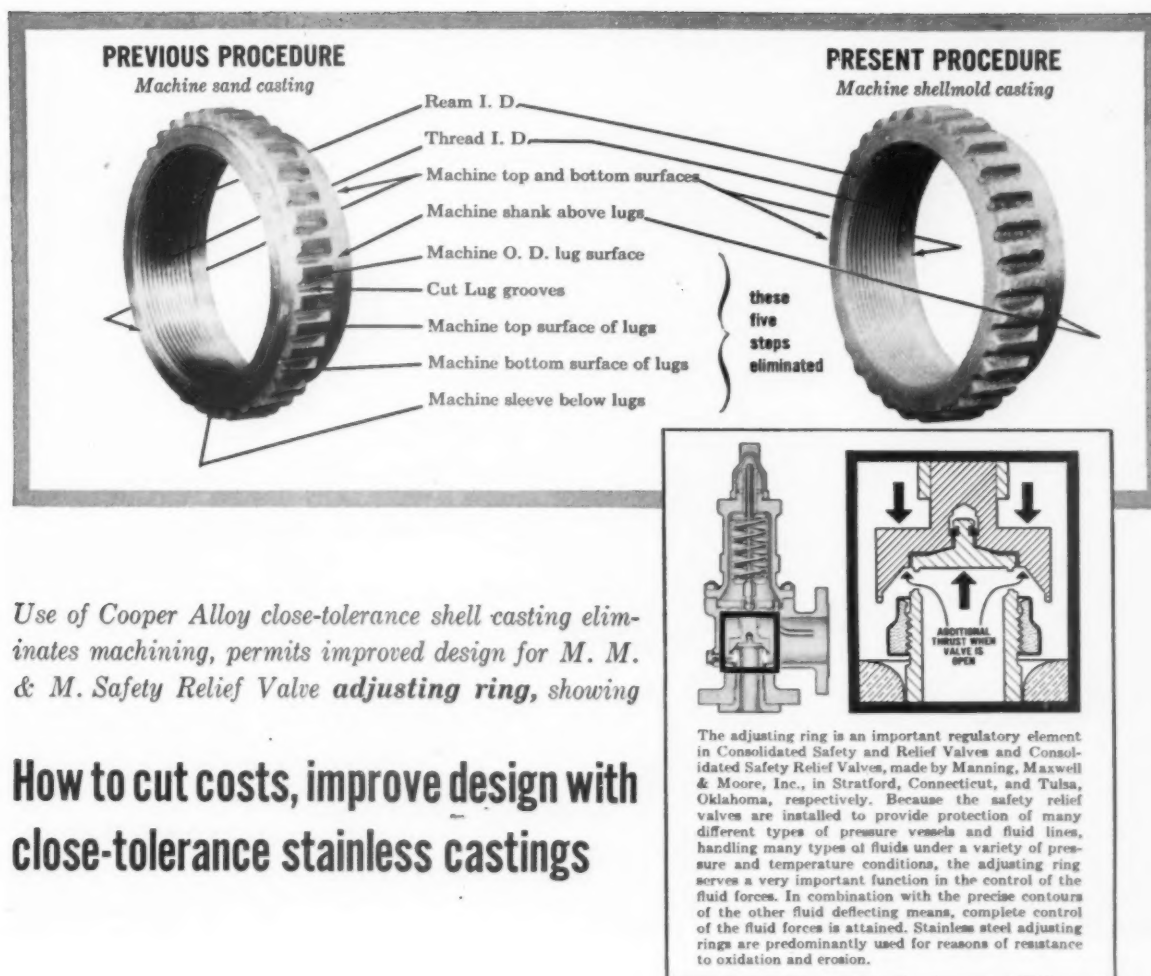
YOURS FOR THE ASKING

Request your copy of the new Mohawk brochure entitled "Why Use Two... When One Will Do". You'll find it's loaded with interesting ideas plus dozens of suggestions that will save you drilling dollars.

world's largest producers of Sublands



Montpelier, Ohio



Use of Cooper Alloy close-tolerance shell casting eliminates machining, permits improved design for M. M. & M. Safety Relief Valve adjusting ring, showing

How to cut costs, improve design with close-tolerance stainless castings

Previous method of manufacture of this Manning, Maxwell & Moore Safety Relief Valve adjusting ring was by machining a sand casting. This necessitated machining of all surfaces, including four facing operations on the lugs themselves.

Design reflects function: The adjusting ring provides for alteration of valve operating characteristics. When the valve is closed, the system fluid pressure acts on the lower side of the disc, over an area equal to nozzle seat inside diameter. Upon discharge, however, the escaping fluid exerts pressure over a greater area of the disc, thus providing a greater total lifting force which operates while the valve is open. By proper design and adjustment of the adjusting ring, the valve can be set to operate according to desired characteristics.

Position of threaded adjusting ring is roughly set during assembly, and later finely set by means of a slender

tool, inserted through the ring pin opening and between the lugs. Obviously, the more lugs the narrower their width, and the more accurate the positioning can be set.

In redesigning for shellmold casting, Cooper Alloy collaborated with M. M. & M. engineers in study of the part, and the following cost-reducing revisions were recommended and adopted:

1. The lugs were designed to be cast in entirety, with no subsequent machining of their surfaces at all.
2. The lugs were made narrower, and their number increased, to make possible greater accuracy of adjustment with the finger tool.
3. The sleeve below the lugs, a machined surface originally necessary to avoid machining into the lugs, was eliminated.

The result: elimination of several major machining operations, substan-

tial savings in cost, and an improved product. As M. M. & M. says, "Our costs were reduced by lower material costs, elimination of milling, and lower machining costs in turning, drilling and boring."

Such economy possibilities are available in almost any part, no matter how simple, or how "cut-and-dried." Cooper Alloy has specialized for 35 years in achieving such uncommon results in close-tolerance stainless steel castings, and can do the same for you.

Why not take advantage of our Foundry Engineering Service? Just send us (without obligation) a blueprint or outline of your problem part, for cost analysis, to: Foundry Products Division—

COOPER & ALLOY
Corporation • Hillside, New Jersey



No matter what you make from Cold Rolled Steel **An ALAN WOOD Representative can help!**

Yes, you can make the all-weather Fishing-Jitney for the fisherman who wants everything. But you had better call your A.W. Representative *before* you start production. Your A.W. Representative may order a special metallurgical study of your problems and bring about savings that build new profits and greater potential. He can

provide you with the latest information on cold rolled steel and its application, plus experienced advice on the gauge, size and type to order. Call him today. Your A.W. Representative is always available . . . never out of touch with your location.

ALAN WOOD STEEL COMPANY

steelmasters for more than a century and a quarter • CONSHOHOCKEN, PA.

DISTRICT OFFICES AND REPRESENTATIVES: Philadelphia
 New York • Los Angeles • Atlanta • Boston • Buffalo • Cincinnati
 Cleveland • Detroit • Houston • Pittsburgh • Richmond • St. Paul
 San Francisco • Seattle
 Montreal and Toronto, Canada—A. C. Leslie & Co., Limited

IRON PRODUCTS "Swede" pig iron	A.W. CUT NAILS Standard & Hardened
STEEL PRODUCTS Plates (sheared) A.W. Dynalloy (high strength steel) Hot rolled sheets Hot rolled strip Cold rolled sheets Cold rolled strip	MINE PRODUCTS Iron ore concentrates Iron powder Crushed stone Sand
ROLLED STEEL FLOOR PLATE A.W. ALGRIP abrasive A.W. SUPER- DIAMOND pattern COAL CHEMICALS	COKE Foundry, industrial & metallurgical PENCO METAL PRODUCTS DIVISION Steel cabinets, lockers & shelving



Suppliers in the News

Edward T. Michalek has been promoted to assistant sales manager of the **SpeedWay Division of Thor Power Tool Company, Chi-**



Edward T. Michalek

cago. Mr. Michalek, who joined the company in 1948, will coordinate expanded sales activities as an assistant to the vice president of the division. The division which produces portable electric tools will soon move into a new plant at LaGrange Park, Illinois.

K. C. Stowell has been appointed a district sales manager for **United States Gypsum Company**, with headquarters in Syracuse, N. Y. Mr. Stowell, who joined the company in 1945, had been sales manager of roofing products in the New York division.

William O. Brown has been promoted to general manager of sales for **Crane Co., Chicago, Illinois**. From his headquarters in the company's Chicago general office, Mr. Brown will coordinate the plumbing, heating and industrial sales activities, as well as the marketing research and advertising-sales promotion departments. He joined the company in 1930 and has held important managerial positions in various branch offices since that time. At the time of his appointment, Mr. Brown was manager of the company's West Coast sales district.

George Townsend Underhill has been elected to the newly created post of vice president in charge of sales for **The Seymour**



George T. Underhill

Manufacturing Company, Seymour, Connecticut. From 1956 until assuming his present position, Mr. Underhill has been vice president and sales manager of Victor Manufacturing & Gasket Company, Chicago, Illinois.

Hupp Aviation Company, Chicago, has appointed J. Kenneth Sloan national sales manager of pumps. Mr. Sloan will be re-



J. Kenneth Sloan

sponsible for promotion and sales of its new Hybrid line of high-speed hydraulic gear pumps. He will make his headquarters at the company's Chicago office. Before

joining the company, Mr. Sloan had been national sales manager of Yale & Towne Manufacturing Company's pump division.

Alverne L. Webster has been named a sales representative and packing and shipping engineer for **Stanley Steel Strapping**, division of **The Stanley Works, New Britain, Connecticut**. He will service the entire northwestern Ohio area.

Air Flow Co., Inc., Philadelphia, Pennsylvania, has been appointed to represent the **Galland-Henning Nopak Division, Milwaukee, Wisconsin**, in Philadelphia and surrounding territory. F. J. Boni, president of Air Flow, has been identified with the sales and application of pneumatic and hydraulic equipment for a number of years. He and his associates will handle the complete line of the division's air and hydraulic valves and cylinders.

Richardson Scale Company, Clifton, New Jersey, has promoted Howard Johnson to southern regional manager with headquarters in Atlanta, Georgia. Mr. Johnson replaces Ernest C. Mott, who



Howard Johnson

has retired after 39 years service with the company. He will be in complete charge of the company's operations in the South from North Carolina to Texas.

Suppliers in the News

Superior Steel Division of **Copperweld Steel Company, Carnegie, Pennsylvania**, has appointed William N. McArdle sales manager of



William N. McArdle

the Philadelphia district. Mr. McArdle has been manager of aircraft products for U.S. Steel Supply Division of U.S. Steel Corporation. Prior to that he served as Chicago district sales manager for Jones & Laughlin Steel and Rotary Electric Steel.

The promotion of Ray Perler to eastern regional sales manager of Yale Materials Handling Division has been announced by **The**



Ray Perler

Yale & Towne Manufacturing Company, Philadelphia, Mr. Perler will have sales management responsibilities for Yale industrial truck sales in Maine, New Hampshire, Massachusetts, Vermont,

Connecticut, Rhode Island, New York, Pennsylvania, Maryland, Delaware, Virginia and Eastern Canada. He has been a senior salesman in the company's New York sales and service branch for the past five years.

The appointment of Dan E. Harrison as vice president and general manager in charge of the Midwestern Division has been an-



Dan E. Harrison

nounced by **True-Trace Sales Corporation, El Monte, California**. As vice president, Mr. Harrison will direct the operations of the Racine, Wisconsin and Westbury, New York plants. He will supervise dealer operations in addition to the sales and servicing of 27 midwest and eastern states. Managing offices for the division are located in Racine, Wisconsin. A licensed pilot since 1934, Mr. Harrison and his staff operate a twin-engine company owned aircraft to offer immediate servicing of accounts under the division.

Pomona Tile Manufacturing Company has opened a new district office at Oklahoma City to handle sales and distribution of Pomona ceramic tile in Oklahoma and parts of Texas and Arkansas. Paul Steele, formerly customer relations representative at the company's Arkansas City, Kansas, plant, has been named territorial representative in charge of the Oklahoma City branch, located at 5209 North Western.

E. W. Baum has been promoted to sales manager of **The Heinn Company, Milwaukee, Wisconsin**.



E. W. Baum

Mr. Baum has been associated with the company more than 20 years, the last five as sales-service manager.

The appointment of Edward F. Kiernan to the plastic film and sheeting sales staff has been announced by **The Goodyear Tire &**



Edward F. Kiernan

Rubber Company, Akron, Ohio. Mr. Kiernan has headquarters in Akron and is responsible for coordinating and promoting sales of the company's new polyester laminating film, Videne A. Prior to joining the organization Mr. Kiernan has acquired more than ten years' sales and development experience in the rubber and plastics fields.

For More Information Write No. 191 on Inquiry Card—Page 32→

PURCHASING

Avoid costly down-time caused by electrical control failure....



GOLD-N-RING CONTROL SWITCHES

Oil-tight, water-tight, dust-tight. Built with heavy duty silver alloy contact points, over-size terminal screws, superior dielectric materials. For full information ask for a free copy of Bulletin ECS-56.



Nothing is more frustrating to the production man than downtime caused by the failure of a minor component. An \$85,000 machine tool down because of a failure of a limit switch can be as expensive as if it were caused by a main bearing burnout. National Acme's electrical controls are designed by machine tool designers and built as machine tools are built. That means extra ruggedness, extra dependability but it does not mean extra cost.



LIMIT SWITCHES

A full line of heavy duty Limit Switches designed originally for machine tool installation but now used wherever extra dependability, extra ruggedness and long life are required. For full information ask for a free copy of our Bulletin EM-51.

NAMCO SOLENOIDS

A full line of standard and custom made Solenoids for AC or DC use. Push or pull types with capacities up to 25 lbs. Bulletin EM-52A provides information on the application, design and installation of Solenoids. Write for your free copy today.

Electrical Manufacturing Division

National Acme

THE NATIONAL ACME COMPANY • 191 E. 131st St. • Cleveland 8, Ohio.

*Now available—
Brainard tube in
beautifully embossed
Sharonart finishes.*



**She's sitting on top
of a great idea**



Welded Steel Tube with a beautifully embossed finish is now available from Brainard Steel. Precision welded from quality Sharonart strip steel, this new tube can help you produce a mar-proof product . . . and that's not all . . . Brainard's Sharonart tube can save you money by eliminating polishing before chrome plating. Available in several designs, this unique tube can give you a product that is distinctly different.

Brainard tube is available in sizes from $\frac{1}{2}$ " to 4", in gauges from .028 to .120. Also available in squares, rectangles and special shapes.

*For more information about
Brainard's full line of steel tubing
send for this all new catalogue
of helpful information.*



Brainard Steel Tubing

Brainard Steel Division, Sharon Steel Corporation
Griswold Street, Warren, Ohio

2192

For More Information Write No. 192 on Inquiry Card—Page 32

For More Information Write No. 193 on Inquiry Card—Page 32→
PURCHASING

PLENTY OF WEAR AND TEAR HERE!

Matched Thermoid Multi-V belts installed on 20 h.p. motor driven tanning drums in the Geilich Tanning Company, Taunton, Mass.

These 6 x 8 ft. tanning drums posed a tough drive problem. Wooden sheaves, small angle of driver contact and constant exposure to tanning agents resulted in severe service conditions. Wear and tear on V-belts was terrific... replacement frequent... until matched sets of Thermoid Multi-V belts were installed.

Now the average belt life is 6 years! Plant personnel report smooth, positive drum action. From every standpoint, service has been more than satisfactory, replacement costs lower and down time less.

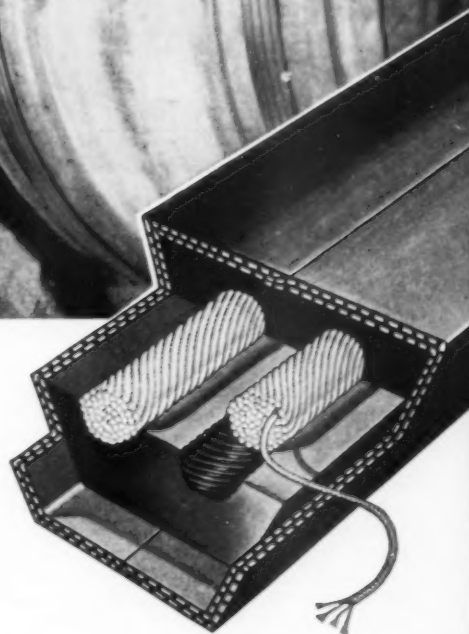
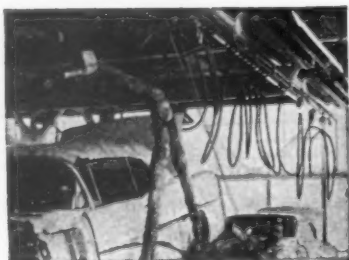
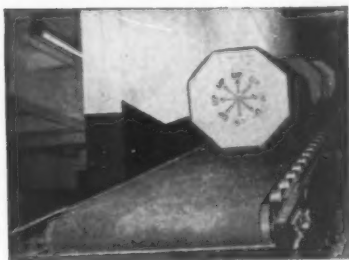
For the extra tough drive problems in your plant, use Thermoid. Every Thermoid Multi-V Belt is *pre-stretched* to provide longer service and maximum power transmission without slippage. Thermoid C, D and E sections are rayon-grommeted for greater strength and extra flexibility to with-

stand repeated shock loads. The entire belt is vulcanized into a solid unit that resists moisture, abrasion, internal friction and heat.

To meet the most exacting requirements of any plant service, your Thermoid Distributor carries a complete line of Thermoid Multi-V belts, hose and conveyor belting.

There's a Thermoid
Conveyor Belt . . .

. . . and Thermoid Hose
for every industrial need.



Thermoid

THERMOID COMPANY, Trenton, N.J.

How does ESNA's complete line turn your special hex nut requirements into standard parts?



What happens when design or production requires a variation on a standard self-locking hex nut? Can you find a source quickly and economically? You can if you call on ESNA, because ESNA's *standard* line of hexagon nuts includes hundreds of dimensional, material and tensile variations. Probabilities are that one of them will meet your requirements.

Every nut illustrated here is a standard part. They range in size from a sub-miniature 0-80 thread that is only .107" across the flats to a 4"-4 thread that is 6 1/8" across. Thread series include SAE, USS and British BSF, BA and Whitworth series. Most are available in carbon steel, stainless, brass, and aluminum. The locking effectiveness of the red locking collar of an Elastic Stop nut has been tested and proved by more than thirty years of actual field service on locomotives, pile drivers, oil drilling machinery and washing machines, truck and tractors. Elastic Stop nuts do not gall or seize bolt threads; they can be re-used many times.

These standard ESNA hex nuts are available from stock or are produced under normal lead times. And, of course, additional hundreds of "specials" are also available. The next time you need either a standard or an unusual hex nut call ESNA, the company that makes the most complete line of self-locking nuts available to American industry.

For details on the Elastic Stop® nuts shown here, write Dept. N43-415



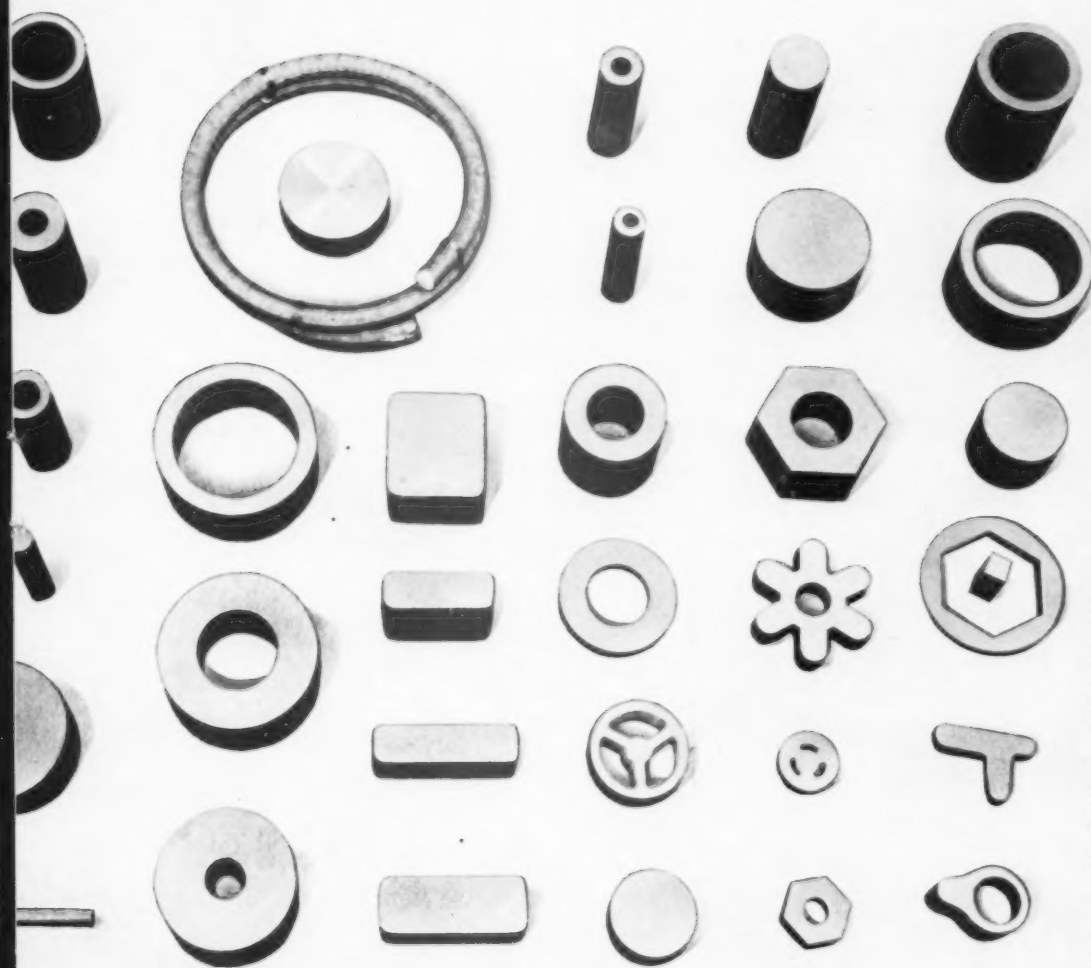
ELASTIC STOP NUT CORPORATION OF AMERICA

2330 Vauxhall Road
Union, New Jersey



In continuous lengths: the bronze casting you want in the shape you want! The advantages of custom-shapes in long lengths instead of individual castings. The uniformity and machinability of bronze alloys with no hard or soft spots: no sand, dirt, or dross to dull tools or reduce cutting speeds. The superior physical characteristics of continuous cast bronzes: impact, tensile, and yield strength, and hardness, improved as much as 100% over the same alloys cast by other methods. Asarco will custom cast practically all standard tin-bronze alloys in the shapes, lengths and diameters you need. Asarcon 773 (SAE 660), general purpose bearing bronze, is available from stock in 260 standard sizes, solids and tubes. Check with your local Asarco distributor or write: Continuous-Cast Products Dept., American Smelting and Refining Company, Barber, N. J., Kingwell Bros., Ltd., 457 Minna St., San Francisco. In Canada: Federated Metals Canada, Ltd., Toronto and Montreal.

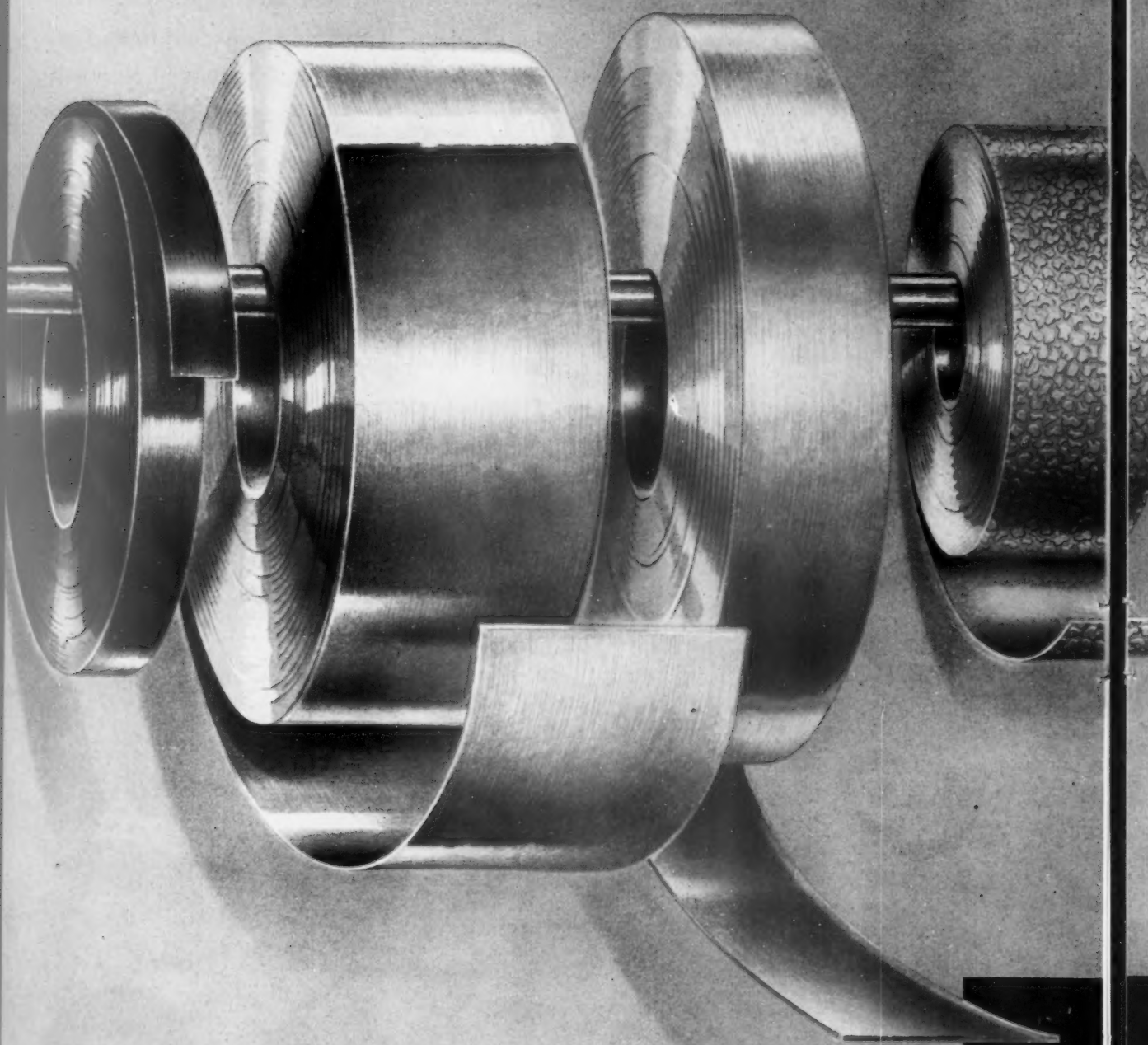
CONTINUOUS-CAST DEPARTMENT OF



ASARCO

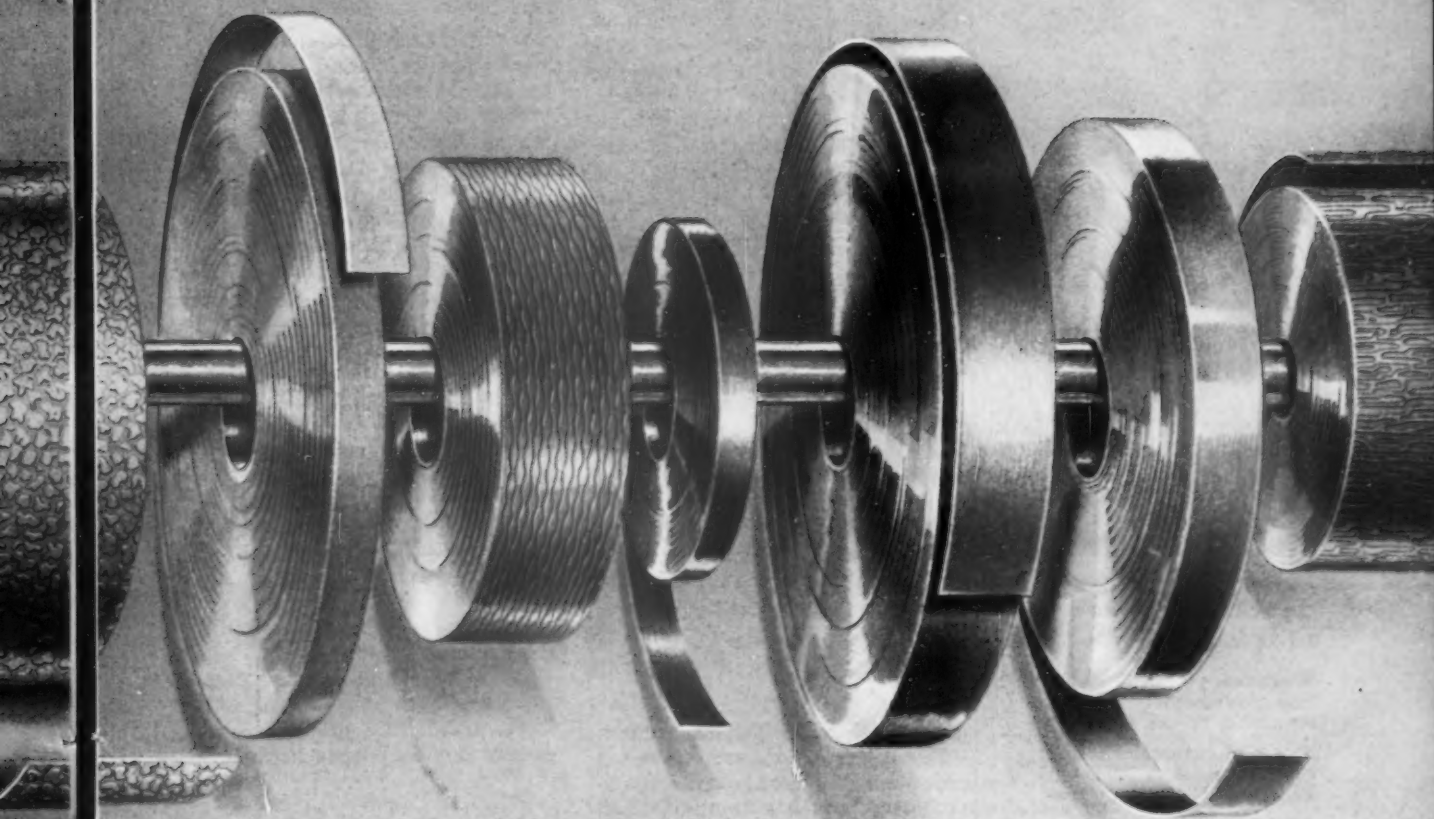
AMERICAN SMELTING AND REFINING COMPANY

SEARON . . .



SR-17

... a **big name**
in specialty steels



For missiles or mixers, rockets or razors—whatever your steel requirements—depend on Sharon for consistent quality . . . exactly to your specifications.

Sharon makes a complete line of chrome, chrome-nickel, chrome-manganese stainless, spring and high carbon, high tensile, coated, silicon—or any special alloy—open hearth or electric furnace, of any surface pattern, including the new rolled-in designs.

If you haven't already discovered this outstanding source of specialty steels, or the significance of Sharon Quality, make it a point to talk with a Sharon salesman at your first opportunity.

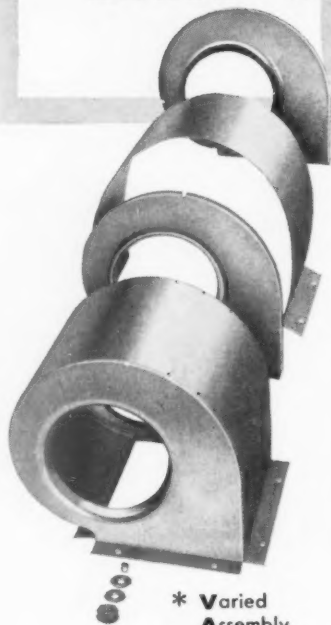


SHARON STEEL CORP.

SHARON, PENNSYLVANIA

from blowers
to bobbins...

take advantage
of **VAW***!



* Varied
Assembly
Work

Whenever you need stampings plus assembly work... remember to call on us.

Scores of customers... from coast to coast... use this PLUS-SERVICE each year.

Added facilities and personnel now make it easy for us to handle more of this work... and at prices competitively attractive.

Be sure to contact us the next time you need stampings, plus assembly!



**DETROIT STAMPING
COMPANY**

408 Midland Ave., Detroit 3, Mich.

Depend on Detroit!

For More Information Write No. 196

← on Inquiry Card—Page 32

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f. o. b. "filosofy of buying"

"**V**ITAL AND dynamic" is the way management of the Dennison Manufacturing Company, Framingham, Mass., describes the work of its purchasing department. And to show that it's not just a casual judgment tossed off for publicity purposes, the company devotes a large portion of the 1957 annual report to its purchasing activities. Included in the 5-page section on procurement are descriptions of what Dennison buys, its purchasing policies (including brief mentions of how it determines inventories, make-or-buy decisions, etc.), its attitudes toward suppliers, and case histories of how teamwork among Dennison purchasing and quality control people, and suppliers, has paid off. "In this manner," concludes the unusual tribute, "by prudent purchasing, careful quality control and close supplier co-operation, Dennison succeeded in converting \$18,754,000 worth of materials, service and supplies into a profitable \$40,992,000 business in 1957... a promise of continued strength and progress in the years to come."

IF THE RECESSION persists, it's not because business men and business observers lack the imaginative approach to things. Donald I. Rogers, top financial writer of the New York Herald-Tribune recently closed out his daily column with this idea:

"Why not create a 'Purchase Day' on which everyone is urged to go out and buy something whose purchase has been deferred because of the insecurity that has been engendered by political statements? A day to go out and buy something—be it an automobile, a home, a can opener or a necktie. And there could be slogans: 'Buy Our Way Out of a Recession' or 'Purchases Make Jobs.'"

One of our readers clipped the column and sent it to us with this somewhat wistful comment:

"Imagine the impact if 25,000 industrial purchasing agents did the same thing!" (Did he mean write columns on business or go out and buy things?)

A CHALLENGING anti-recession campaign is also being waged by Harold Bugbee, president of Walter B. Snow & Staff, Inc., Boston advertising agency. PURCHASING's editor received the following telegram from Mr. Bugbee:

"Earnestly solicit your editorial support in campaign to urge industrial management relax its suicidal no-expenditures policies. Just completed survey indicates among our clients alone 30 million in proposals frozen by management refusal to spend. These are not long-range capital expenditures but for equipment and supplies vital to efficient operation, product improvement and cost reduction. Estimate 10 to 15 billion in orders nationally approved and ready to place except for top management attitude. Government spending may take 18 to 24 months to prime pump. Industrial orders could do it now. Let's make 1958 the year we proved our confidence in capitalism."

KICKBACKS AND other unethical practices are on the increase, according to Norman Jaspan, president of Investigations, Inc. The situation will continue to worsen, he says, as profits get slimmer and companies "are more dependent for survival on the buyer and purchasing agent than ever before in the last two decades." We'd like a few more facts and figures before we'd go along with Mr. Jaspan on the amount of turpitude among purchasing people—but we like his recognition of the fact that without good purchasing industry perishes. At any rate, according

to Mr. Jaspan, dishonesty in most cases is a byproduct of mismanagement. So, in our opinion, is bad buying.

Sin we'll always have with us, man being what he is. But what excuse does industry have for poor purchasing?

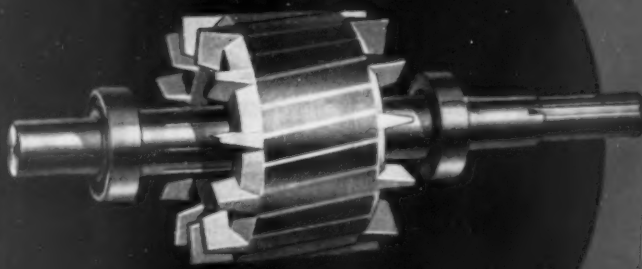
THE LIE that purchasing agents and buyers are a bunch of fish-eyed, grim-faced introverts has finally been nailed down. The truth comes out in a new welcome booklet issued by the purchasing



department of British Columbia Electric Company, Limited, Vancouver, one of the hundreds we have seen. Not only are the 13 members of the purchasing department pictured in the booklet, but 10 of them are actually *smiling* their welcome to visiting salesmen. (Three are a little bit reserved, but are by no means unfriendly. Probably didn't want to overwork the idea.) The cover of the bright and informative 8-page publication features a photograph of handsome, genial G. L. "Geoff" Haszard, general purchasing agent, greeting a visitor with genuine warmth. Purchasing agents casting around for ideas to improve their public relations would do well to study a copy of the B. C. Electric booklet.

• APRIL 14, 1958

NEVER any broken bars!



BALDOR STREAMCOOLED MOTORS

Advanced aluminum rotor casting process prevents air bubbles and shrinkage that cause stress and trouble!

For over a third of a century Baldor has pioneered many new ways to build electric motors better . . . for less money. Baldor's aluminum-cast rotor in the new NEMA frames is a good example.

This careful, precision method of casting produces a rugged, stress-free rotor without air bubbles and shrinkage cavities that can cause broken bars . . . loss of power . . . and motor damage! New design refinements have also improved torque characteristics while lowering the noise level.

Engineering extras like this (without extra cost) are your guarantee that you can specify Baldor Streamcooled Motors with complete confidence.

FOR MORE INFORMATION ON THE COMPLETE
LINE OF BALDOR MOTORS, WRITE . . .

BALDOR

ELECTRIC COMPANY

4363 Duncan Avenue

St. Louis 10, Missouri

Over 500 Authorized Sales & Service Distributors in U. S. A.

District Offices: Atlanta • Chicago • Cleveland • Dallas • Dayton • Des Moines • Detroit • Litchfield, Conn.
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For More Information Write No. 202 on Inquiry Card—Page 32

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HONEYWELL BUYER'S GUIDE



Every Instrument Accessory* **you need...**

with prompt delivery of stock items!

***ACCESSORIES**

Thermocouple Wire
Extension Wire
Thermocouple Elements
Insulators
Heads and Blocks
Protecting Tubes
Wells
Complete Thermocouple Assemblies
Quik-Konnect Components
Megopak Products (ceramic-insulated,
small-diameter thermocouples)
Charts and Inks

WITH Honeywell's complete line of pyrometer supplies to draw from, you don't have to keep your own costly inventory of instrument supplies. And you can be sure of getting the right accessories, at the right time, in the right amount... stock items delivered in one week... all other standard items delivered in two weeks... after receipt of order in Philadelphia.

Call your nearby Honeywell Supplies Man... he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim
Avenues, Philadelphia 44, Pa.

Honeywell



First in Controls

Highlights

✓ Buying For Monsanto: \$315 Million At 14 Plants

A purchasing organization that spends 58% of its company's \$546 million annual sales volume, controls buying at 14 plants, and has 158 on its personnel roster has some interesting problems—and some interesting answers. The answers are contained in the latest of our full-scale studies on large-scale purchasing operations, "The Monsanto Purchasing Story," beginning on page 69. These are some of its highlights:

Centralization vs. Decentralization. How do you preserve the advantages of local on-the-spot purchasing service to the plants without diluting corporate-wide buying power on key commodities?

Blanket Order Buying. The idea of calling in suppliers and asking them to quote on consolidated requirements isn't new. But it can be a real money-saver for companies not using it.

Mathematical Stores Control. Use of simple economic order quantity formulas meant big savings in inventory and purchase costs. And the approach is an easy one for the smaller firm to apply.

Cutting Transportation Costs. It's possible to make amazing savings just by carefully checking freight bills. Other opportunities to save are often overlooked. Monsanto's techniques are just as applicable to the smaller firm as they are to the larger one.

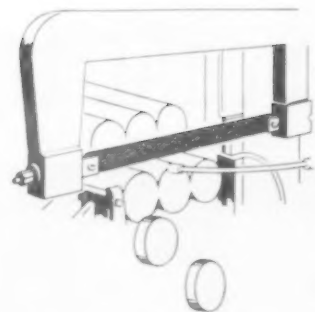
Statistics Cut Risks. Intelligent use of statistical analysis can be invaluable in market forecasting. This technique—still in its infancy—is revealed for the first time in any purchasing publication.

✓ Is The Recession Waning?

The P. A. is one of the major figures in the current business recession just as he was in 1949 and 1954. His opinions on inventory policy carry weight with top management and, in the aggregate, affect the entire economy. So this month's purchasing opinion poll, "Is the Inventory Recession Over?" on page 19 is of vital interest to both the purchasing executive and the business community as a whole.

✓ Free On Board.

You don't have to pay a common carrier to get a chuckle out of PURCHASING's feature F. O. B. on page 62. Besides comments on lighter side, the editor discusses unusual news and business developments and their effect on purchasing.



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The Collapse of "Fair Trade"

THE ABANDONMENT of "fair trade" price maintenance in the retail distribution of household electrical appliances, and the ensuing buying spree at bargain discounts, is the best evidence we have had so far that we are in a buyer's market. It also demonstrates the futility of artificial price controls when they run counter to the basic economic situation.

There's nothing intrinsically wrong in price maintenance. The courts have repeatedly affirmed the right of a seller to select his customers and to sell on his own terms. Some states have specifically approved price maintenance under "fair trade" agreements; others have ruled against the practice. Where this system has been in effect, it has been perfectly legal and presumably reflects the best marketing judgment of those who used it. The only thing the matter with it is that it hasn't worked. There would seem to be something faulty in a system when a manufacturer has to spend a million dollars in an unsuccessful attempt to impose fixed prices on the distributor and the user.

The initial price reaction probably went too far, but that is a characteristic of corrective reactions. Real price stability comes only when price is brought into balance with the underlying economic and competitive factors.

The "fair trade" collapse may be a significant indicator on the broader business scene. Many observers have pointed out that the current let-down in business has been curiously free from the price adjustments that normally accompany such conditions. That may be a tribute to indirect price supports and strong selling policies. It may also indicate an unwillingness to accept necessary corrective measures. However painful and unpalatable they may be, if they are too long deferred the inevitable reaction will be more drastic still. It could be disastrous.

Our whole economy is based on high volume of production and sales. Buyers, whether for the family or for industry, look for value. In the long run, it is their willingness to buy that establishes market values and makes sales.

This is an unpopular doctrine, but a basic economic fact. Herbert Hoover, who has had some experience in these matters, finds some resemblance in the present situation with the early stages of a more serious let-down. It is not too late, he tells us, to put sound corrective measures to work. But, he reminds us, external salves rarely get to the root of the trouble. That's the way real depressions get started.

Stuart F. Henwitz

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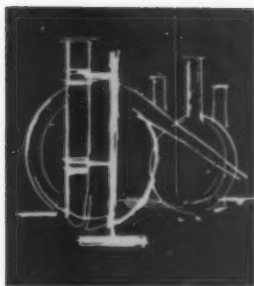
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The Monsanto Purchasing Story

Purchasing has an exceptionally strategic position in this big chemical company. Purchased materials are the biggest expense by a wide margin; they're more than three times total company payroll costs.

By Dean Ammer and John Van Deventer

MONSANTO CHEMICAL Company was founded by a purchasing agent, John F. Queeny. And it's been purchasing-conscious ever since. Purchasing's key role in the big chemical company isn't just derived from sentimental attachment to the founder's business background, however. Monsanto is purchasing-conscious because it has to be. The company's annual report to stockholders shows why. Expenditures of \$315 million for "raw materials, fuel, supplies, etc." were a whopping 58 per cent of the company's \$546 million sales volume. At Monsanto, the dollar volume of purchases is nearly three times as great as total payrolls.

Monsanto is by no means unique in its industry in that purchased materials are by far the most important single expense. In chemical manufacturing purchased raw materials are processed through purchased equipment and shipped out to customers in purchased containers. Highly automated processes help keep direct labor costs to a minimum, so purchased raw materials, equipment, and operating sup-

plies are, by far, the most important expenses.

Monsanto purchasing is centralized organizationally and decentralized geographically. Director of Purchases Howard J. ("Larry") Heffernan is directly responsible for the activities of a central purchasing department in St. Louis and 18 different plant purchasing departments. Plant P. A.'s report policy-wise to central purchasing but naturally work closely with plant operating people. And the most important criterion central purchasing has for rating a plant P. A.'s performance is his success in satisfactorily serving the needs of the operating people.

Heffernan and Assistant Director of Purchases Prescott Sandidge are responsible for more than just the company's buying activities. Also reporting to them are the traffic department and package development and labeling group. In all, they're responsible for the activities of 158 people—77 of them in St. Louis and 81 scattered in 14 plants throughout the country.

Most of the company's buying

is done at the plant level. Central purchasing negotiates source and price on many of the major raw materials but leaves the balance of the buying job—including the issuing of orders, expediting, etc.—to the plants. Central purchasing also handles a few national contracts for maintenance supplies, etc. and will help the plants on any purchasing problem where its specialized skills can be applied. Despite central purchasing's important role at Monsanto, all the "bread-and-butter" buying needed to keep operations running smoothly is done at plant level.

Monsanto's purchasing organization thus preserves the advantages of local on-the-spot purchasing services to the plants without diluting corporate-wide buying power on key commodities. It has "generalists" to handle the widely varied needs of the plants and "specialists" to negotiate over-all deals for the commodities whose dollar volume is so big that they must get extremely close attention if the company's competitive position is to be improved.

Monsanto over-all is broken down into five operating divisions,

each of which has a number of plants. Nevertheless, there is no such thing as a division purchasing agent at Monsanto. Monsanto management feels that an additional organization level in purchasing would slow communication and generate red tape. While this is probably true, having 18 purchasing offices scattered throughout the country reporting directly to them did create a tremendous work load for Sandidge and Heffernan. They both felt that they were not giving the plant purchasing people enough help and attention. So, on Jan. 1 of this year, they did something about it.

Appointed to the newly created position of manager, plant purchasing offices, was J. R. Sayers who was formerly supervisor of purchasing's planning and research section. Sayers is officially "responsible for general supervision of all plant buying groups and for the improvement of their performance."

So far, of course, Sayers is still in the process of getting his feet wet in his new job. He's been spending about two-thirds of his time visiting the plants and the balance in his office in St. Louis. Heffernan and Sandidge still intend to get to the plants occasionally though not as often as before. With the new set-up, they hope to be able to get a better picture of relative job performance at the plants, ideas on how central purchasing can help the plant people do a better job, etc. by having Sayers "live" the plants' problems on a full-time basis.

The plants didn't, of course, operate in a vacuum before Sayers got his new assignment. Both Heffernan and Sandidge spend a big percentage of their time traveling. In addition, an annual meeting of Monsanto plant P. A.'s and central purchasing staff provides good opportunities to swap ideas and get the corporate slant on buying problems.

There's naturally a lot of written communication between central purchasing and the plants. The plants are informed about all agreements central purchasing makes concerning over-all corporate purchases. A purchasing manual helps guide everyone in



Felix N. Williams (right), Monsanto's vice president for manufacturing, has top level functional jurisdiction over purchasing and traffic. Conferring with him are Director of Purchases H. J. Heffernan (center) and Assistant Director of Purchases Prescott Sandidge.

purchasing toward uniform policies and precedures. Each plant submits a monthly purchasing report to keep central purchasing informed of its activities. The report includes information on general business conditions in the plant's area, price changes, buying activities, and personnel changes.

In addition to this formally organized communication, there are naturally a lot of informal contacts between the plants and central purchasing. Buyers in central purchasing who negotiate raw materials contracts must keep close to the plants' problems if they are to do a good job. That's why, for example, R. H. Burnett, a section manager of raw materials in central purchasing, makes a point of visiting the Springfield, Mass. plant about four times a year and Texas City, Tex. twice a year.

Buying Raw Materials

Section Managers Burnett and J. F. Parsons each are responsible for a greater dollar volume of purchases than that of many big corporations. Together they're responsible for negotiating about 250 corporate-wide contracts for roughly \$175 million worth of raw material. Burnett specializes in inorganic chemicals such as

chlorine and soda ash and certain organic chemicals including alcohols, amines, etc. Parsons handles other organic chemicals including naphthalene, coal tar derivatives, coke breeze, and benzene.

Although every purchasing activity has an important effect on company profits, the areas supervised by Burnett and Parsons are undoubtedly the most critical. And it isn't just the dollar volume that makes raw materials purchasing important. The basic competitive position of the company on end products is heavily influenced by the efficiency with which raw materials are bought. For example, if the company should be locked into a long term contract for a key raw material at an unfavorable price relative to a competitor, it's almost impossible to make a fair margin of profit at the market price. Contrawise, the profit margin can be fattened if a competitive advantage can be obtained in raw material costs.

Negotiating raw materials contracts calls for the mature judgment that can come only from years of experience even if the buyer makes use of all available aids including market forecasts, etc. A good chunk of total raw materials requirements must be bought on long term contracts in



J. Richard Sayers, manager of plant purchasing, spends much of his time working with plant purchasing people. Here he discusses procedures with Richard M. Hoover (left), P. A. of Monsanto's Nitro, W. Va., plant.



Negotiations with suppliers take up a good part of every buyer's time. Shown are Ronald H. Burnett, section manager of raw materials purchases, William G. Carpenter and Edwin A. Schneider of Columbia-Southern Chemical Corporation.

order to assure a supply to meet production requirements. Needless to say, since only the future will tell how advantageous any long term agreement will be, such contracts are reviewed with extreme care before they're approved.

Although they always like to be committed for enough material to meet minimum requirements, Monsanto buyers prefer to have some "cushion" to permit them to shop around. Often they're able to make deals on a spot basis for a part of their requirements at extremely attractive prices.

Every Seller a Buyer

Chemical buying is complicated by the nature of the industry itself including the facts that:

- Many chemicals can be made by widely varying processes.

- The chemical industry is, by a wide margin, its own best customer.

Many of the basic chemicals can be made from a variety of raw materials in a variety of ways. This serves to give the chemical buyer plenty of latitude but it also makes it extremely hard for him to judge his markets. This is particularly true if he's buying a chemical that's a by-product of some other industry.

For example, the steel industry is a seller of many by-products arising from its coke oven operations. Often by-products are produced and sold regardless of the price they command. When steel operations are at a high level, the quantity of these by-products increase. When they're down, supplies tighten up. All this means that a good chemical buyer must be familiar with the general economic trend and be familiar with operations in a number of industries besides his own. This, Monsanto buyers try to do. In addition, they also make sure of statistical tools discussed in a separate section of this article.

Chemical buying is further complicated by the fact that the industry is its own best customer. Some of Monsanto's major suppliers are also both customers and competitors. Consequently, trade relations are extremely important, and purchasing and sales must work together in the best interests of the company as a whole.

Besides the two raw materials sections central purchasing has a third buying section which handles just about everything but raw materials that's bought on national contract. The mechanical and supply section, headed by C. H. Downs, handles all such con-

tracts for supplies, construction and machine contracts, surplus disposal, and services. Besides negotiating company-wide contracts in its field, Downs' group keeps plant purchasing people informed on economical sources of supply, price breaks, quality standards, and substitutes. In addition, it works closely with engineering groups on standardization and maintains up-to-date catalog files on new products, etc.

Small Staff, Big Job

Unlike some big corporations, Monsanto believes in having a minimum of "staff" people in purchasing. It has just two: C. J. Koenig, manager of the administration section and his assistant, A. J. Frankel. Between them, Koenig and Frankel have three big jobs: procedures improvement, market research and value analysis, and liaison on research and development.

Streamlining Procedures

Koenig (who's a procedures expert brought in from accounting) is currently studying ways to improve purchasing procedures. One of his big jobs will be to complete the company's purchasing procedures manual. A future project will be mechanization of procedures to adapt them to the "electronic computer age."



Big project of Clarence J. Koenig (left), purchasing's administrative section manager, is investigating mechanization of purchasing procedures. Here he confers with electronic data processing experts George F. Almon (center) and John M. Dawson.

Checking on construction materials requirements for a project at Monsanto's John F. Queeny plant, St. Louis, are Charles H. Downs (left), manager of purchasing's mechanical and supply section and Charles T. Morris, P. A. for Organic Division engineering.



Irby L. O'Brien, assistant general traffic manager, views one of the yards that helps make St. Louis, Mo., a major rail center. More than 50 per cent of Monsanto's shipments move by rail.



Market Research. Frankel is the group's market research expert. He helped develop the benzene forecasting techniques which are described in a separate section of this article because they represent such a break-through in basic buying techniques.

Research Buying. Research is life blood of every chemical company. And each company, including Monsanto, jealously guards new ideas, products and processes that might give it an advantage over competitors. This, in turn, makes buying chemicals for research extremely tricky. Quite a few of the research chemists in every company have national reputations. If it's known that one of them is using a given special chemical, it's not hard to deduce what he's working on. And, it's fabulously wasteful to make a small quantity of a given lab chemical when you can buy it from someone who's already got

it. The best procedure is to have central purchasing buy it. This preserves the anonymity of the ultimate user and keeps cost at a minimum.

This work with research is one way purchasing can keep informed on new product developments. Purchasing can also help research on new products by bringing it into contact with research-minded suppliers and screening out suppliers who will just waste a valuable research chemist's time.

Package Development

About the only other activity associated with the purchasing department that could be called "staff" is the packaging development and labeling section headed by R. D. Minter. This group buys no packaging; its function is entirely advisory. In effect, it's a combination engineering and value analysis group specializing in packaging and labeling. Although the group spends most of its time on packaging products that Monsanto sells, it also occasionally assists suppliers on packaging problems.

The group is associated with purchasing mainly because of the tremendous importance of purchased packaging materials—the 1957 bill exceeded over \$10 million. Monsanto uses about a hundred different basic containers. They range from paper bags to barges. By careful analysis of packaging, it's possible to make impressive savings. Some of these made by Minter's group are illustrated in this article.

Useful Ideas Galore

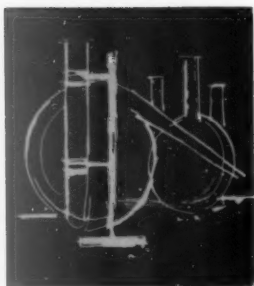
Like most other purchasing departments, the pressure of everyday activities keeps Monsanto's from getting into many projects that look promising. Nevertheless, Monsanto purchasing has developed many purchasing techniques that can be profitably studied by purchasing men both within and without the chemical industry. Some of them are so important that they're described in detail on succeeding pages. Don't miss the separate articles on blanket order buying, inventory control, traffic, and statistical forecasting that follows.



Monsanto's annual purchasing meeting provides an ideal opportunity for purchasing personnel to exchange ideas and become acquainted with new policies and procedures.



Watching a "hot" shipment that he's been expediting come in is John Duncan, P. A. of Monsanto's Springfield, Mass. plant.



Harry Lanser, P. A. of Monsanto's John F. Queeny plant, has been one of the company's foremost advocates of blanket order buying.

Buying MRO The Easy Way

Big Monsanto Chemical is applying a small purchasing department money-saver in a big way. The results: less paperwork and lower costs.

- Costs cut by \$9000.
- Inventory down 8%.
- A quarter-million pieces of paper eliminated.

THAT'S THE two-year box score of the blanket order system at Monsanto Chemical's John F. Queeny plant in St. Louis. And this impressive record has been made on electrical items alone. Queeny recently started using blanket orders for hardware and tools. This made for additional annual savings of \$7000.

"The potential is tremendous," says Harry Lanser, Queeny plant purchasing agent. "We're now trying to establish orders for two or three more commodities each year. Bearings, stationery, and insulation are next. We hope to save \$5000-\$7000 a year on each of these commodities.

Continued Lanser, "here in a nutshell is how our blanket order system works:

"We make contractual buying agreements for repetitive store-room purchases. One blanket order lasts a year. Orders are phoned in, eliminating paper work. Dray tickets serve as re-

ceiving reports. They're signed by our receiving clerk after he verifies the receipt. Invoices are held in the storeroom and matched with dray tickets at the end of each month. At time of matching, the storekeeper and another individual sign a certificate of receipt. The regular receiving report has been modified for this purpose. Our internal auditing department agrees multiple signatures are a sufficient check. Also, invoices are checked against prices established on blanket order agreements."

Getting Started

The blanket order system is used to the extent that it is at Monsanto plants because of the considerable exchange of information among plant purchasing agents. At an annual plant purchasing agents' meeting a few years ago, Sumner Goldthwaite described the blanket order system used at the Everett plant. Later some of the plant's P.A.'s, including Lanser from Queeny, went to Everett to see the system in action. From these visits, the blanket order system used at Queeny and other plants developed.

"We put electrical items under blanket orders first," said Joe Good, assistant P.A. at Queeny, "because of their large volume. We first estimated the average annual use of each of the 707 electrical items carried in stores. We based this on consumption for the past three years.

"Next, we sent a letter to our electrical suppliers asking them to quote on repetitive electrical items for a one-year period at specific guaranteed prices. In our letter, we tried to sell blanket orders to our suppliers."

Both buyer and seller benefit from blanket orders. The supplier is ahead with blanket orders because he can:

1. Buy and schedule his material more economically since blanket orders help give him a better estimate of his sales volume.

2. Reduce sales cost and increase his volume since salesmen are free to work on developing new accounts once blanket order agreements are negotiated with existing customers.

Monsanto also gains from blanket orders since they:

1. Permit the company to buy at more competitive prices.

2. Reduce average inventories since suppliers are able to stock many items for the company once they know the annual requirements.

Supplier participation in the plan paid off. Blanket orders became something that wasn't just purchasing's idea but represented a team effort. So suppliers enthusiastically did their best to cooperate.

Suppliers quoted on about \$90,000 worth of repetitive electrical items. Orders were placed on the basis of three criteria: price, quality, and supplier inventory adequate enough to provide good service.

The most promising bidders were asked to verify their prices and their intention to maintain adequate inventories for Monsanto's requirements.

"Direct cost savings aren't the only benefits we're deriving from

blanket orders," Lanser declares. Among the other benefits are:

1. An 80% reduction in the number of suppliers with a consequent saving of both buying and clerical time.

2. Reduced expediting because suppliers now guarantee minimum inventories.

3. Faster delivery time (from an average of nine days to three days) arising from the fact that orders are now telephoned in and also because there are fewer delays with suppliers carrying minimum stocks.

4. Faster delivery of material from receiving to stores since there's no longer any need to make out a separate receiving report for each shipment.

5. No danger of back-door selling. Consolidating requirements on blanket orders gives purchasing an even firmer control over supply sources.

Needless to say Purchasing Agent is "sold" on blanket orders. Other Monsanto purchasing people share his enthusiasm.

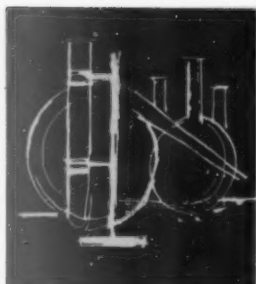
Simple Idea Brings Big Savings on High Usage Items

Blanket orders aren't the only money saving techniques used at Monsanto's John F. Queeny plant, St. Louis. Sam Hilliard, the plant's storeroom supervisor, came up with an idea a few years back that brought big savings. One day Hilliard analyzed requisitions on the storeroom. His figures showed that over 400 people came in with 630 requisitions. Ninety per cent of the requests were for maintenance items—many for repeat items with very high usage.

Hilliard got an idea: Why not keep high usage maintenance items at a number of points throughout the plant? He got together with purchasing and it was agreed to buy 11 "rota" bins to be placed in strategic locations throughout the plant. The bins were equipped with electric counters to keep track of withdrawals.

This simple change brought big results. Over 150 trips per day to central stores were eliminated. Since the average trip took about 20 minutes, this meant a daily saving of 50 man-hours per day. In addition, the bins helped reduce floor space needed to store maintenance items by 40 per cent.

Hilliard hasn't run out of ideas. His latest timesaving plan is to have service personnel phone in orders. Clerks in the store room can make delivery by truck thereby saving valuable maintenance time.



Traffic Know-how Keeps Costs Down

TRAFFIC IS big business at Monsanto Chemical Co. The traffic department, which is linked organizationally with purchasing, is responsible for over \$40,000,000 worth of freight expense. And the skeptic who says, "How can a traffic department save any money since all freight rates are set by the I.C.C.," would have his eyes opened by Monsanto's record.

In 1957, the company's traffic department could proudly report these accomplishments:

- Negotiated rate adjustments—\$1,385,000.
- Savings from auditing freight bills—\$350,000.
- Savings from consolidating shipments—\$275,000.

Negotiating Rates

"There's plenty of competition among common carriers," declares Monsanto's traffic manager, H. F. Klocker, "and we do our best to route business to carriers that will do the best job for us." Even when rates are identical, there are often wide differences in service. And rates aren't as inflexible as many people think. Railroads, trucking companies, and barge operators all fight to avoid losing business to a competing carrier.

In order to give the major forms of transportation the attention they deserve, Monsanto has a specialist on each in its traffic department. This pays off. When railroads, for example, are presented with impartial figures proving that shipment by barge or

The transportation bill is bigger than you think. But plenty can be done about it. At Monsanto Chemical good traffic management saved over \$2,000,000 last year.



Mel E. Iten, freight traffic manager, visits plant location to inspect leased tank truck equipment. Monsanto has upped its use of tank trucks by 40 per cent in the past four years.

truck is cheaper, they'll try to do something about it. If the ICC approves they'll cut rates to meet competition. Monsanto's traffic specialists negotiated rate reductions amounting to \$200,000 per year and \$300,000 later on one major commodity by doing just this.

Shrewd traffic rate negotiation can also be helpful in less obvious situations. For example, if a competitor of Monsanto's in a different area is getting a better deal on the freight rate of a given commodity, it's perfectly legitimate for Monsanto to go after a rate reduction.

If top management doesn't bring traffic into the act early in the game when it's thinking of building a new plant, it can easily be making a multi-million dollar mistake. For example, when Monsanto was planning one new plant, traffic was informed far enough in advance to be able to negotiate switching charge rates on traffic to and from a nearby large city. This meant a \$60,000 saving. Negotiations like this should take place before the plant is actually built and Monsanto no longer has the choice of picking a plant site adjoining a competing railroad's right-of-way.

Consolidating and Pooling

"Almost any company can save money by carefully consolidating and pooling shipments whenever possible so as to minimize premium charges paid for LCL and LTL," declares Traffic Manager Klocker. The principle is simple. Just hold up on non-rush shipments and accumulate until you can ship in car- or truck-load quantities. Of course this requires the cooperation of other departments. But this can be achieved since the savings are tremendous—\$275,000 last year for Monsanto.

Transportation charges are easy to compute. But rate structures are extremely complicated. This helps make for tremendous opportunity for cost reduction by auditing freight bills. Naturally the more complicated the calculations the more opportunity there is for human error. Carriers are just as anxious as their customers to see that the proper charges are



General view of the traffic section of Monsanto's central purchasing and traffic department in St. Louis.

made for each shipment. Consequently, they're very cooperative when errors are called to their attention.

Monsanto saved \$350,000 last year by checking its freight bills. This big saving was made by limiting the audit to those transportation bills that exceed \$100. "We could undoubtedly catch a lot of errors by making the same thorough audit of the smaller bills but the saving we make probably wouldn't equal the cost of discovering the errors," Klocker admits.

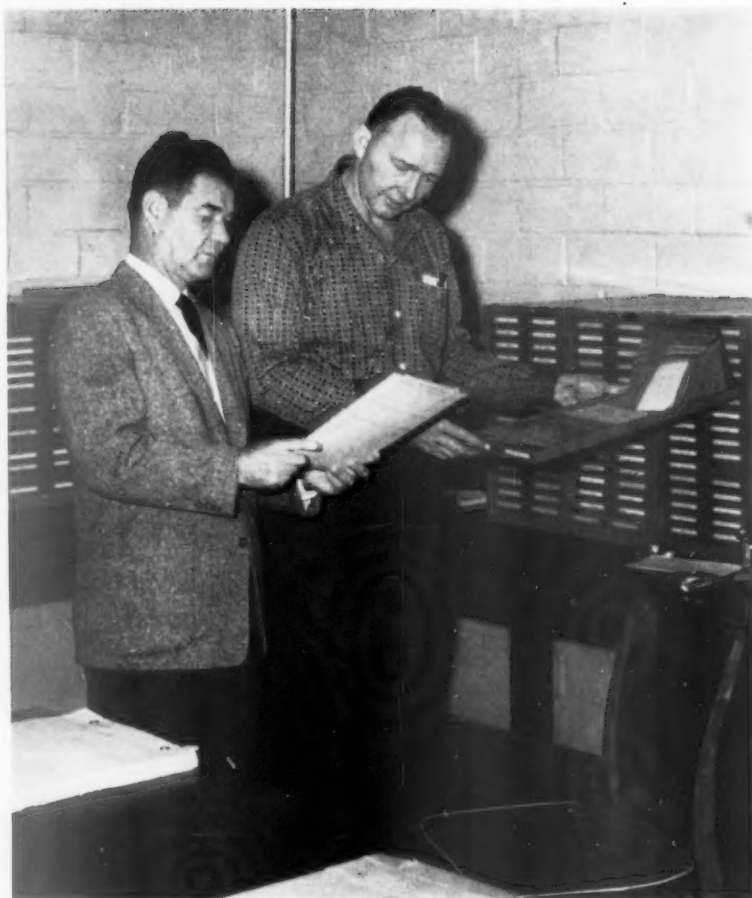
Even though the audit is limited to the bigger charges, more than 600 invoices a day are audited. And an average of about 20 of these are "pick-ups!" (A "pick-up" is a freight bill where charges are incorrect.) "Pick-ups" are about evenly divided between correction of rates and correction of computations. In one month, for example, rate corrections were \$17,400 while corrections in computations were \$15,700.

Special Projects

For more than a decade now, transportation rates have steadily advanced. This increases the opportunities for saving by long range studies designed to permit changes to cheaper modes of transport, etc. Since new facilities are often involved, such projects usually involve other departments

besides traffic. For example, traffic works closely with purchasing's packaging and labeling specialist, R. D. Minter. The big savings in this area often come by changing from packaged shipments to bulk shipments.

Big projects involve almost every department in the company. For example, the company recently completed facilities to handle barge shipments of molten sulphur. The molten material can be pumped into storage tanks which greatly reduces the cost of handling. This more than offsets a higher freight cost. Most of traffic's efforts, however, are devoted to the day-to-day problems that pop up in moving material both into and out of Monsanto's plants. "Our relations with the buyers are excellent," says Klocker. Monsanto's buyers are probably more conscious than most buyers of the need to notify traffic of any major changes in supply sources as early as possible. It takes 60-90 days to negotiate and get a new rate approved and traffic can always do a better job if it has an adequate amount of time. The buyer that notifies traffic he's got shipments enroute from a brand new source may be unwittingly wasting thousands of dollars if the commodity must be shipped under a "class" rate temporarily because there hasn't been sufficient time to get a "commodity" rate.



Purchasing Agent J. E. Bittinger checks inventory records with Storekeeper H. E. McAllister at Monsanto's El Dorado, Ark. plant.

Inventory Program Yields Big Savings

Simple mathematical formulas help reduce stocks, cut purchase costs.



IF YOUR management is becoming "recession-conscious" and putting the heat on to cut inventories, you'll be interested in the inventory program of J. E. Bittinger, supervisor of purchasing and stores, for Monsanto Chemical's El Dorado, chemical plant. The program was developed during the last business downturn, right after the end of the Korean War. At that time, warehouse stocks at El Dorado had climbed to twenty thousand items with value of nearly \$2 million. When business fell off, such high inventories weren't needed to support production.

So an inventory reduction program was started. Eventually, annual savings from this program, which made use of techniques suggested by central purchasing in St. Louis, exceeded \$13,750 for the El Dorado refinery and chemical plant. In addition inventories were cut by \$190,000.

The first step in the program was to weed out the surplus and obsolete items. Supervisors reviewed all requirements for their areas and recommended revisions in maximum and minimum stocks. This had been done periodically in the past. But this time the urgent need to cut stocks was especially emphasized. So supervisors did their best to whittle off the surplus items.

Action by supervisors helped get rid of a lot of excess inventory. But there was still no guide to help determine the economic maximum and minimum inventory for the items still stocked. The answer to the problem was found in a report from Monsanto's central purchasing in St. Louis which described a simple economic order quantity formula:

LARGE ITEMS

	Cooper-Bessemer Cylinder Assembly	Cooper-Bessemer Distributor	Cooper-Bessemer Main Bearing	Cooper-Bessemer Ring Set
Unit Cost, Dollars	\$ 644.00	\$ 528.00	\$ 69.00	\$ 41.00
Annual Usage, Units	6	5	17	90
Old Order Frequency per Year	3	1	1	3
Old Operating Cost, \$ per Year	\$ 49.00	\$ 82.00	\$ 40.00	\$ 46.00
Economical Order Frequency	6	5	4	7
Economical Operating Cost, \$ per Year	\$ 36.00	\$ 29.00	\$ 19.00	\$ 34.00
Former Maximum/Minimum	10/5	4/2	30/15	50/30
Recommended Maximum/Minimum	4/3	2/1	14/8	30/18
Reduction in Maximum Inventory Value in Dollars	\$3984.00	\$1056.00	\$1107.00	\$ 816.00
Possible Return on Inventory Reduction at 18%, Dollars/Year	\$ 717.00	\$ 190.00	\$ 199.00	\$ 147.00

SMALL ITEMS

	Type 1	Typical Replacement Type 2	Ball Bearings Type 3	Type 4
Unit Cost, Dollars	\$ 6.05	\$ 3.25	\$ 1.97	\$ 1.55
Annual Usage, Units	23	11	7	6
Dollars	139.00	36.00	14.00	9.00
Old Order Frequency per Year	8	7	6	6
Old Operating Cost, \$ per Year	\$ 20.50	\$ 17.70	\$ 15.10	\$ 15.10
Economical Order Frequency	1	1	1	1
Economical Operating Cost, \$ per Year	\$ 6.90	\$ 3.60	\$ 2.90	\$ 2.80
Former Maximum/Minimum	10/6	2/1	2/1	4/2
Recommended Maximum/Minimum	20/5	8/2	8/2	10/2

$$X = \sqrt{\frac{PI}{2S}}$$

[A similar formula is described in detail in this article, "Make Money With Mathematics in Purchasing," *PURCHASING*, March 3, 1958, page 84.] Twenty items were "guinea-pigged" at the start. Using the formula, the savings that could be made by changing order frequency were calculated. These estimates were presented to management. They looked so promising that purchasing got a go-ahead on a complete survey of all stock items.

Fortunately, this wasn't too tough a job at El Dorado. The system of keeping separate inventory record cards for each item which showed current stock, usage during the year, maximum and minimum stock levels, and unit price. But even with these better-than-average records, it is still a big job to make the necessary computations. Engineering was called upon to help. It devel-

oped formulae to plot the economic order quantity data graphically. But even this was too slow. So then accounting was asked to help. A 604 computer was programmed to compute the data. It did the job in just sixteen hours.

Using the Data

The output from the computer was analyzed by supervisors in purchasing, production, and warehousing. In general, items with a high dollar volume were ordered more frequently than before. And those with infrequent usage were reduced in order frequency to as seldom as once a year. Actual savings that were made are illustrated in this article.

Savings from the inventory reduction program are actually greater than indicated. Paperwork was also cut substantially. Before the program, an estimated 68% of the paperwork came from items worth less than five dollars. And these small-value items, de-

spite their numerical preponderance, only totaled about 4% of over-all dollar volume of inventory. Now every item worth less than five dollars is carried on a free issue basis. This eliminates preparation and handling of charge tickets.

Bittinger is the first to agree that economic order formulae don't give the whole answer. Human judgment is still essential to weigh the fine points of quantity purchasing discounts, lead time, obsolescence, etc. But he's by no means ashamed of the savings made at the El Dorado plants through the use of mathematics. And these savings reflect a very conservative estimate that it costs 6.3% per year to carry inventory—including interest and overhead. If it were assumed that the money saved by having lower inventories could be profitably invested in new plant or equipment yielding about 20%, then savings would be correspondingly greater.



Statistical Forecasts Minimize Commodity Market Risks

When you're buying commodities that are extremely volatile price-wise, it's extremely difficult to evaluate the forces of supply and demand. Statistical projects can be invaluable.

MANY CHEMICAL raw materials are subject to wide price movements. Seasoned chemical buyers are, of course, expert in spotting the prevailing trend. Partly by instinct and partly by thoughtful analysis, they weigh the complex forces of supply and demand, and determine the trend. Joe Parsons, who has spent most of his business life buying raw materials for Monsanto Chemical Co. is one of the best in the business when it comes to buying chemicals. But Parsons is the first to admit he can make mistakes. The market forces are just too complex for anyone to be right in judging them all the time. But now, through the efforts of Monsanto's purchasing planning and research section, he's got important new statistical tools to help him in market forecasting. For good reason, the new tools were first tried on benzene.

Volatile Commodity

One of the roughest markets to buy in is that for benzene. The problem comes on the supply side. Benzene comes from three basic sources: it is a by-product of coking operations in the steel in-



Monsanto buys benzene by the bargeload. Observing the unloading are General Traffic Manager Harry Klocker and Joseph F. Parson, section manager of raw materials purchases. Many Monsanto plants use water transport.

dustry; it's made by the petroleum industry; and it's imported. What makes the benzene market tough to forecast is not the wide variety of supply sources, however. It's actually the fact that so much benzene is a by-product of other operations.

By-products tend to be produced regardless of the price they

command on the market. Their production is mostly controlled by the demand for the primary products. For example, if steel output is at a high level, there are lots of by-products available from coke ovens. Unfortunately, the demand for steel and the demand for benzene don't always coincide. In recent years when

steel output has tapered off, this has meant increased pressure on other sources to make more benzene. This has often meant sharply higher prices. Since benzene output is up 140% in the last ten years, there haven't been too many times when there's been an excess supply. However, sharp price breaks are possible when steel output zooms up and there's no corresponding increase in benzene demand.

Two Forecasting Methods

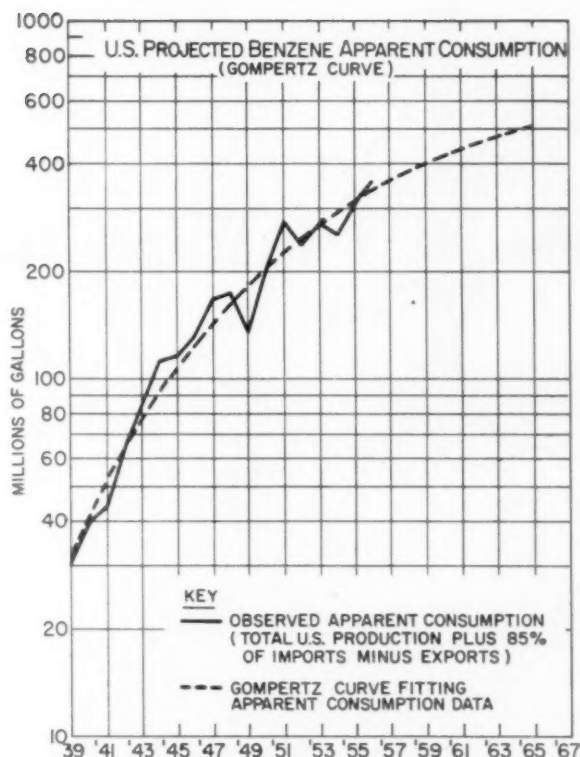
Though statistical analysis doesn't eliminate the need for keen human judgment in buying benzene, it does make the job easier. Knowing that it was attempting something new in purchase analysis, Monsanto's purchasing planning and research section tried two different approaches in projecting benzene usage. The first made use of an existing program for a 702 computer. The second used the "least-squares" technique.

The computer was used to mathematically fit a Gompertz trend projection curve to data covering past benzene consumption. The Gompertz curve recognizes three stages of growth:

1. An initial development period in which consumption slowly increases.
2. A period of rapid growth during which the product "catches on."
3. A period of slower growth as the market approaches saturation.

The actual usage of benzene was found to fit the Gompertz curve shown in this article fairly well. The projected consumption for the next ten years is indicated.

Results of the Gompertz curve were compared with those obtained with the "least squares" method. With the "least squares" method, benzene usage is plotted on semi-log paper and a curve fitted by "least-squares." The slope of the curve gives average percent per year of growth. However, there's no allowance—unlike the Gompertz technique—for declining usage as markets approach saturation. So least squares is good only for shorter term forecasts while the Gompertz curve is for a ten-year projection.



This chart graphically illustrates how closely benzene consumption computed with the Gompertz curve matches the observed consumption. Other curves can be used for other materials.

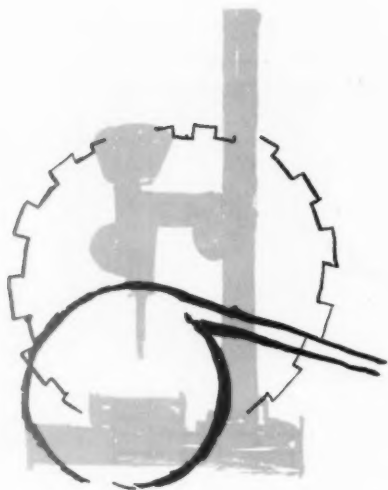
"Comparison of the two methods of calculating benzene usage shows that they're pretty much in agreement with each other," declares Allen Frankel of the planning and research section. They also agree with predictions made by experts in the field.

Some Limitations

"However," Frankel cautions, "neither type of curve will fit all situations. Nor will it fit chemical raw materials other than benzene." Monsanto is already experimenting with statistical techniques for projecting usage of other chemical raw materials. In each case (and this can be a serious limitation in making forecasts), a "normal" growth pattern has to be determined in order to find the curve that's appropriate. For example, some materials have already reached maturity growth-

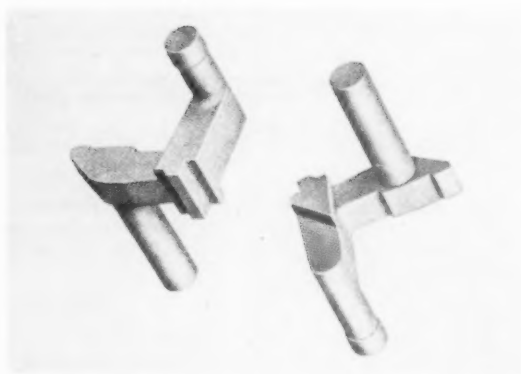
wise. Their curve of projected usage would be quite different from that of benzene which is still growing. Other materials are still in their infancy. In each case, assumptions must be made.

Monsanto has already programmed other curves, including the "Logistic" curve, on its computer for use in analyzing appropriate raw materials. Statistical analysis of raw materials, using computers and up-to-date statistical techniques, is still in its infancy. Nevertheless, Monsanto has accomplished a great deal when it can consistently predict, by different methods, the growth pattern of a material like benzene. And, even if the projection is not 100% accurate, it's still an invaluable aid to the buyers. And, since benzene is Monsanto's single most important raw material, almost anything that can be learned about its future is worthwhile.

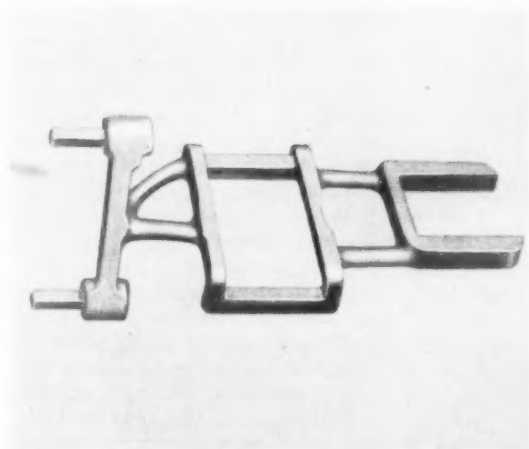


What the P. A. Should

By T. E. Du Mond



Gun Breech Mechanism—previously machined from SAE 1020 forgings, the levers are now produced of alloy steel. Castings pass 100% x-ray inspection.



Instruments—costly rough machining of the forging was eliminated by substituting an investment cast blank at a net saving of 37 machine hours.

ONE OF the more interesting casting processes has been identified by a variety of names during its long history of use. Dating back to the pre Christian era, the method has always been used for the manufacture of intricate shapes and in its recent history for the casting of "difficult" metals.

First popularly known as the "lost wax" process, it acquired the label "precision casting" during World War II. More realistic practitioners of the art now call the method "investment casting" and that is the most accurate and descriptive name.

The prime assets of investment casting methods are the ability to create complicated shapes from materials that do not lend themselves to machining and to cast complex parts which would ordinarily involve prohibitive machining costs. Investment casting is often used to combine several shapes into one single piece and thereby reduce manufacturing costs.

It is almost impossible to consider a field in which investment castings are not or cannot be used. However, their greatest use up to now has been for making turbine blades and buckets, radar, electronic and electrical equipment and military products.

The Process

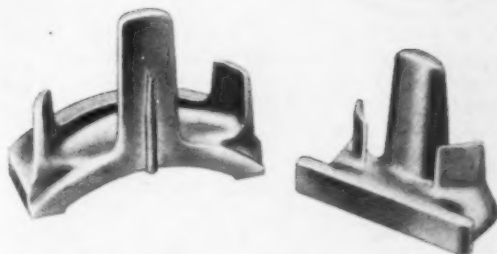
Currently there are several variations of the basic investment casting process, some of which are patented methods. The principles are essentially the same, variations come largely in the

Know About Investment Castings

This is the sixth in a series of articles on the technical aspects of purchasing. The material that will be presented is meant to provide a "refresher course" for experienced buyers and basic instruction for trainees or buyers new to specific commodities. Mr. DuMond is the author of the well-known book, "Fabricated Materials and Parts" (Reinhold Publishing Corp., New York). A mechanical engineer, he has spent many years in technical writing and editing. He has published two other books on engineering materials and fabricated shapes.

pattern materials, mold materials and casting methods.

Investment casting involves considerable hand labor, hence is relatively slow as compared with high speed production methods. As has been true with all casting methods considered up to this point, the first step in making an investment casting is the making of an accurate master pattern of the desired shape. The master pattern is then used to make a mold which is used repetitively to make expendable wax patterns essential to the process. Wax patterns, perhaps for one part, but usually for several, are then assembled on a wax sprue. The entire pattern assembly is then coated with an "investment" ma-



Coil Winding Form—one of a group of such units, they were formerly machined from solid stock. By using an investment casting the costs were reduced.

terial, usually some type of ceramic. As the investment hardens into a shell the complete unit is placed in a flask surrounded with more investment material. Before further use, the investment material must set and harden.

One of the more popular newer methods is the use of frozen mercury instead of wax to make patterns.

Preparatory to actual casting, the wax patterns are melted and drained from the investment material leaving voids of desired shape ready to receive molten metal. After the cast metal has solidified, castings are removed from the flask, cut from the pouring sprue and cleaned of gate marks and other extraneous material.

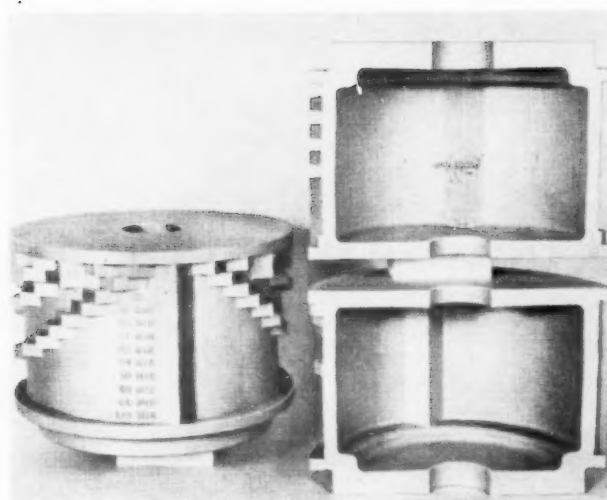
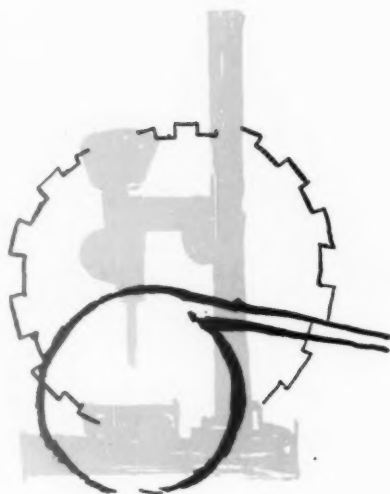
When castings are made of machinable metals it is possible that some secondary operations such as threading or tapping or other machining will be done. For less

machinable metals molds are made in such a way as to eliminate these steps. Surfaces of investment castings are such that normally no work is required. In fact, the process is noted for the accuracy with which surface detail is imparted from mold to part.

Cost Factors

On a strictly cost basis, investment castings are considered relatively expensive. There are a number of reasons for this. It must be remembered though, that investment casting is probably the only method capable of achieving some shapes and certainly the only method to enable the practicable application of some materials.

Among the more important reasons why investment castings are more expensive than many other types of fabricated parts are the relatively slow production rates and the considerable amount of hand work involved in making



Oil Machinery—originally made from aluminum discs, stacked together and held together by machine screws. Cast in beryllium copper the weight was reduced 40%.

wax patterns and assembling them into clusters for casting. In some instances the disposable patterns are now made more inexpensively and rapidly by using plastics which are automatically molded by machine.

Principal factors affecting costs are:

Raw materials costs are usually quite high. This is not basically a fault of the process. Rather, it is due to the fact that investment casting is most frequently used to cast alloys that are difficult, if not impossible, to form by other methods.

Tool and die costs range from low to moderate. These costs depend to a great degree on whether or not a good model is available from which to make pattern molds. A satisfactory model from which to work will bring these costs down appreciably.

Original models range in cost from \$25 to \$2,000 or more depending upon their complexity and the materials from which they are made. Soft metal molds are least expensive, from \$75 to \$300 or more. Cutting molds directly into steel becomes considerably more expensive, but can be justified when quantities are sufficiently high or when plastics patterns are used.

Production rates of about 100 pieces per hour are about all that can be expected from a single production unit.

Most scrap generated in investment casting can be remelted and used for additional castings, thus minimizing scrap losses.

Finishing operations are simple and inexpensive. Many investment castings are finished by automatic tumbling, belt grinding or sand blasting.

Labor required for investment is not of a highly skilled nature, but there is a great deal of hand work involved. The net result is a relatively high labor cost as compared to many other production processes.

Advantages and Limitations

When parts must be made of metals that are extremely difficult to machine, the investment casting process has unapproachable advantages. Metals of this type include those used for jet engine parts and others which are to be subjected to extremes of temperature, corrosion and wear.

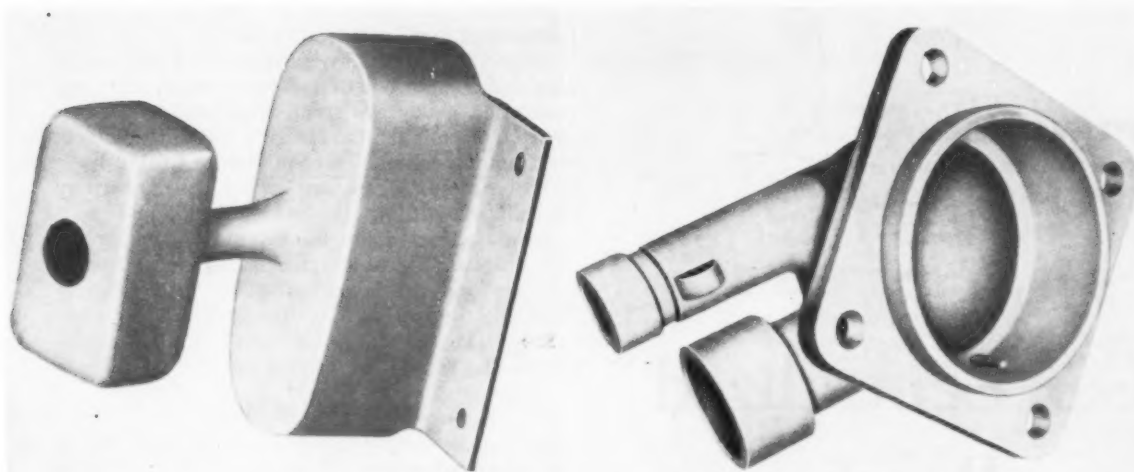
Another advantage of investment casting is difficult to evaluate immediately. That is the ability to reproduce highly complicated shapes. Under some cir-

cumstances this ability can be used to combine several small parts of an assembly into one unit. Holes, recesses and voids of almost any size or shape can be cast readily, as can threads of moderate fineness.

There are two major limitations in the use of the investment casting process. First there is the matter of size. Although larger investment castings are made, the process is most satisfactory for parts weighing one pound or less. The other limitation is the matter of cost. Costs, of course, include the hand labor involved, expendable pattern and investment materials and modest cleaning and finishing charges.

Materials Used

Nearly any metal that can be melted with reasonable stability and has moderate fluidity under these conditions can be used to make investment castings. Generally strength properties of investment cast metals approach or equal those of the same metals in the wrought condition. In rare instances, properties are better. Other properties, such as elongation and impact strength which are normally improved by rolling operations, are somewhat lower in investment castings.



Investment casting permitted this part to be designed as a single unit with the small rectangular box-like section cast as a shell with only two small openings.

Attempts to produce this part by die casting, machining and sand casting, machining forged blanks, and brazing assemblies all failed for various reasons.

The bulk of precision castings are made of stainless steels, copper alloys and special high-temperature nonferrous alloys. The process is also used to make castings of aluminum and is increasing in importance for the fabrication of lightweight magnesium electric components.

Sizes and Tolerances

In certain circumstances investment castings weighing as much as 25 to 30 pounds are practicable, but normally the process is best suited to small parts. A top limit of one pound is often cited as the average. Actually the bulk of investment castings weigh far less than this. Weight will, of course, vary with the material being cast. Possibly the best guide is size. Most equipment is geared to production of parts up to 10 inches long and possibly 5 or 6 inches thick. This is an overall size and is usually a cluster of smaller parts, for the process is not at its best in forming thick massive shapes. When possible section thicknesses are held to about $\frac{1}{4}$ inch. At the other extreme a minimum thickness of 0.030 inch, or more, is recommended, depending upon the metal being cast.

In achieving dimensional tolerances of plus or minus 0.005 inch

per inch of length are readily attained. On extremely small parts, tolerances might be as low as 0.002 inch. As with most methods, unnecessarily restrictive dimensional requirements result in excessive costs. When one particular dimension must be closer than others, the casting operation can be planned to attain it without undue cost.

Sometimes it is less expensive to provide final dimensions through machining or grinding than it is to try to get them in casting.

When to Choose

Unlike some other processes where a choice can be made largely on a whim, there are several clearly discernible guideposts to indicate whether or not investment casting should be considered.

Investment casting is a likely choice when any or all of these conditions prevail:

- (1) If the material specified for the part cannot be readily formed by machining, forging or another less expensive method.
- (2) If the method will eliminate the need for more costly tools and dies.
- (3) If assembly costs can be

overcome by combining two or more parts into a single casting.

- (4) If quantities are sufficient to absorb tooling costs and special engineering.

Conversely, there are at least two factors which should indicate that another process might do the task better and at less cost. They are:

- (1) If the shape and material are easily handled by other methods. An exception would be when quantities are not great enough to justify a high production method.
- (2) Where tolerance requirements are too strict to be met by investment casting.

As a somewhat special type of production process, investment casting is somewhat difficult to categorize in the matter of minimum quantities. Under certain conditions the production of one part might be justified. Normally a top limit of 1,000 pieces is considered the top economical quantity in ordinary metals. However, there is really no minimum or maximum quantity when shape and materials combinations are such that they cannot be produced otherwise.



Can Centralized Purchasing Be Too Centralized?

Growth of multi-plant organizations has posed important questions about concentrating all purchasing authority at one point or delegating it to the branches. There is no set of rules that gives the answer. Each case must be judged on the basis of the individual company's nature and needs.

By Stuart F. Heinritz

AS LONG as a company's manufacturing is concentrated in a single plant, the problem of organization for purchasing is pretty simple. Centralized buying is the answer that is almost universally accepted in modern industrial management and has stood the test of every varying fortune of the economic cycle. This means: a separate department for the special function, responsible for all procurement activities, headed by a competent buyer-executive, directly accountable to top management for supply service and purchasing performance, and adequately staffed with buying specialists for the various types of commodities needed. Size of the staff may number anywhere from a handful of employees to several hundred. The essence of centralized purchasing is the same—one channel of procurement, one

point of responsibility and accountability, one departmental facility to do the job.

As soon as a company grows beyond the simple, single-plant stage, so that material needs arise and purchased goods are used at several branch or division locations (and that's rather common, even among companies of moderate size) a basic question arises. Shall purchasing still be strictly centralized, with the strong central department at headquarters doing the buying for the entire organization? Or shall purchasing authority be delegated to the branches? The latter plan is popularly known as decentralization. More accurately, it is the establishment of centralized purchasing at and for each plant.

Two Points of View

Opinion is sharply divided on this point. There are strong advocates for each system, and good examples of both types of organization in actual practice. The decision is influenced by conditions of the particular case. For example:

Are the various branches essentially engaged in the same type of operation, or do they produce different product lines and use different manufacturing processes?

To what extent are material requirements common to the several divisions?

How are the plants geographically related to each other?

In over-all management policy, is the plant manager independently responsible for profitable operation of his unit, or is he rather in the position of an operating superintendent, getting his instructions from central management?

After all these questions have been taken into consideration, management's decision, as indicated by the type of organization in effect, is about three to one in favor of decentralized buying. In the majority of cases this is qualified as "decentralized purchasing with centralized control", but the central controls vary widely in degree and effectiveness. Frequently they amount only to an advisory service and a general statement of policy.

The Case for Centralization

Advocates of strict centralization base their argument on nine principal points:

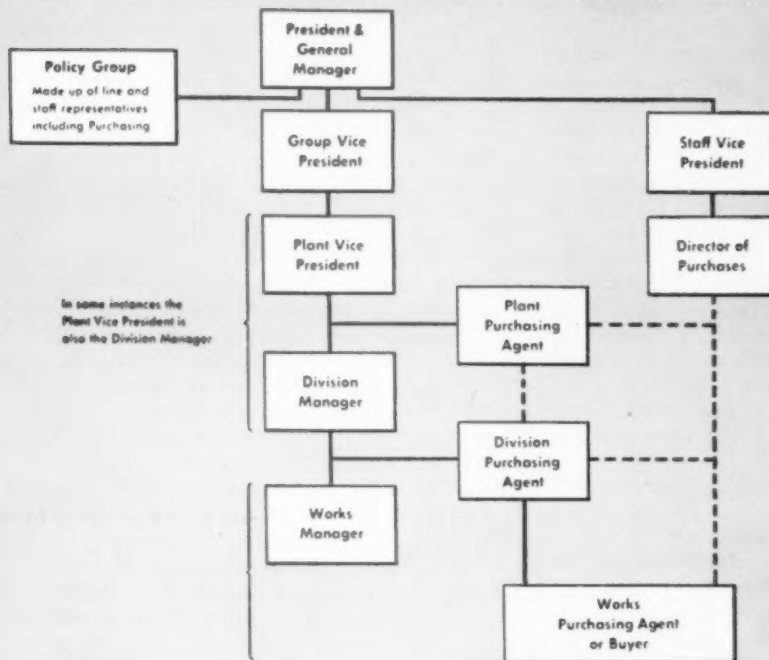
1. The cumulative requirements of the entire company present opportunities for greater quantity purchasing advantages and tactical purchasing power.

2. It is desirable to have one buying policy and uniform procedures throughout the entire organization.

3. Central supervision is the best means of evaluating purchasing activities and maintaining high standards of performance. The staff responsibilities of the chief purchasing officer can be most surely effectuated through direct administration of all buying.

4. A higher degree of specialization and purchasing skill can be expected, as compared with a situation in which the same responsibility is delegated to several buyers at the various plants.

CHART OF ORGANIZATION OF PURCHASING RESPONSIBILITY



LEGEND:
Solid lines represent chain of command (authority)
Dotted lines represent channels of communication (advisory)
(These are the formal lines of authority and communication and do not limit channels of contact.)

5. Quality of purchased materials is more readily controlled when they are bought on one contract from one source than when orders are placed with several unrelated sources by as many different buyers.

6. There is added flexibility in that shipments on existing contracts can be allocated and directed to various plants as needed instead of initiating a new purchase. The transfer of materials from one plant to another may be the quickest and most economical way of meeting an emergency need.

7. One plant's surplus may be used to fill another's needs without making an additional expenditure, at the same time getting a better return on the value of such surplus.

8. Losses from obsolescence of parts due to changes in model or design can be minimized by concentrating the "balancing out" process of manufacture on the existing model in a single designated plant.

9. Geographical plant location is a relatively unimportant detail. The purchasing department is not necessarily located at the plant in any case, being properly considered more as a part of the general executive organization than as a part of the manufacturing operation. With modern telephone, telegraph, and teletype facilities, distance in itself need be no obstacle to efficient buying service.

The reasons for establishing separate plant or divisional purchasing departments may be summarized as follows:

1. The plant or division manager is responsible for the efficient and profitable operation of that company unit. Therefore he should have jurisdiction over purchases as well as production, since a large proportion of his costs and a major factor in the efficiency and continuity of production are bound up in the procurement function.

2. If the branch or division is large enough to be considered as an economical operating unit, it is usually large enough to realize the advantages of volume purchasing on the basis of its own requirements. In most instances, it is as large or larger than many complete independent companies in the same field, and its corporate relationship to other divisions is merely incidental in this comparison. The law of diminishing returns applies to centralization in the organization and procedures for purchasing as well as in the mechanical phases of industrial operations. Good management seeks the method of maximum efficiency, rather than the arbitrary observance of even a proved principle like centralized purchasing.

3. Where the geographical distance between plants is significant, purchasing by remote control from a central office entails a time lag that may result in serious delays in procurement. It

is poorly adapted to cope with emergency requirements that may arise. Even under the simplest systems, it involves considerable duplication of paperwork and records.

4. Remote central purchasing sacrifices the direct, daily contacts with departments where needs arise and materials are used. It is usually necessary, in any case, to have a purchasing department representative stationed at the plant to maintain this liaison. The most effective utilization of such representatives would seem to lie in more, rather than less, delegation of independent responsibility.

5. Each plant or division usually has some unique requirements and differences in operating conditions that affect material needs and procurement. Transportation, climatic conditions, storage facilities, plant equipment and methods, local trade conditions and ordinances, and suppliers' distribution policies all have a bearing on purchasing programs. The plant purchasing department is in the better position to understand these factors and adapt to them.

6. Where two or more plants have common requirements, suggesting an advantage in joint procurement, it is entirely feasible to regard this as the exception to the general rule and to handle it accordingly, rather than the other way round.

7. General purchasing policies, like any other company policy, and uniform basic procedures can be effected through standard practice instructions. Staff purchasing functions such as economic research, special commodity studies, and company wide standardization, can be made available to plant purchasing departments through normal organization channels without conflicting with autonomous purchasing action.

8. The public relations aspect of purchasing must be considered, as well as the more objective factor of over-all purchase volume. Good will can be fostered by purchasing from nearby sources, or through local distributors and sales representatives, so far as is practicable. Such policies are likely to be more effective, consistent, and personalized when they are locally administered. Certainly they identify the company more closely with the community in which the plant is located, in the public mind. Thus purchasing departments at the plant location can be the means of creating and maintaining good public relations which reflect to the benefit of the entire company.

Central Controls

As previously indicated, the second set of arguments seems to carry the greater weight, so that the trend is strongly toward the policy of decentralization. But this does not deny the validity of the premise that the central department, with its over-all view of the purchasing operation, its closer liaison with top management, and usually with more extensive staff facilities, can make a substantial contribution to better buying in the branch or divisional departments. Among these services and controls are:

1. Uniform policies and procedures established

through a company-wide purchasing manual; uniform quality standards established by company-wide specifications; economic, market, and commodity research distributed to all branches as a staff service.

2. Continuing review of all purchasing activities by having copies of purchase orders routed to the central office. This is the basis for evaluation of purchasing performance and for advisory services to improve performance. Systematic monthly reports from branch purchasing departments, correlated at the central office and redistributed to the branches in summary form, with buying recommendations.

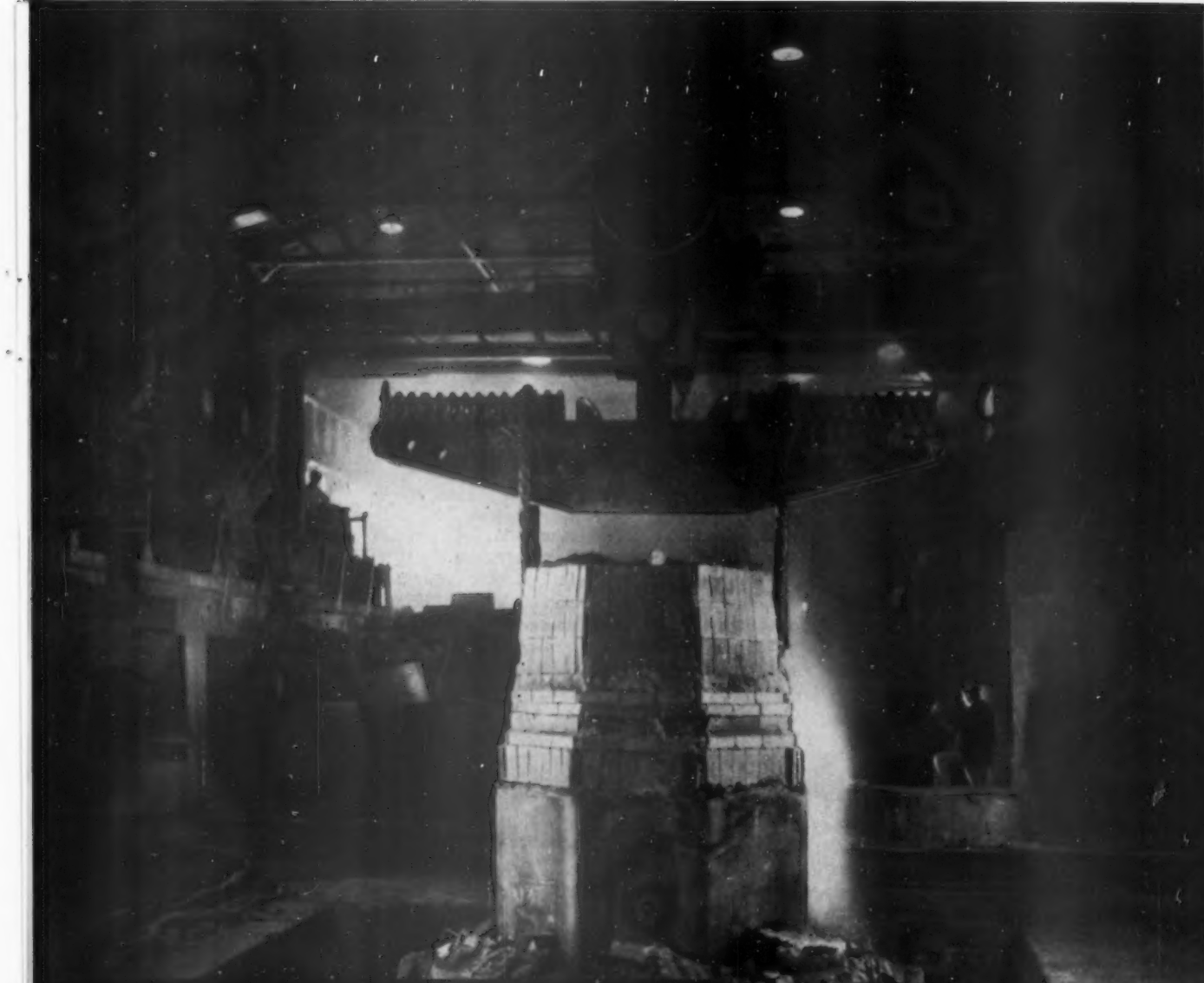
3. Special attention to purchases of large dollar value. This is sometimes accomplished by placing a dollar limitation on branch plant purchases, any orders or contracts in excess of this stated limit being subject to approval by the central department. This procedure corresponds to the rather common regulation in many purchasing departments that orders amounting to more than a stated dollar value be approved by the head of the department, or by some higher executive.

4. Contract service of various types. Certain items may be designated as contract items, and are purchased by the central department for all plants. In some cases, the initial requirement of a new item is purchased by the plant purchasing department, with subsequent review to determine whether it shall be classified as a contract item or left open for individual purchase. Some products purchased on a "national account" basis require a central contract to earn and maintain these terms. Some central departments negotiate contracts for materials and supplies in common use, with provision for shipment to all company locations at the buyers' option. Branch plant buyers are expected to issue release orders against these existing contracts, but are not obliged to do so if they can improve on these terms through special local arrangements. The object in all cases is to purchase on the most favorable terms available, and to make these terms available to all buyers in the company.

5. Special advice, assistance, or staff services as requested.

6. Periodic meetings, usually quarterly, attended by buyers from all divisions, at which experience is shared and mutual problems are discussed and resolved for the benefit of the whole organization. Sometimes these meetings are rotated among several plants, giving all buyers an opportunity to familiarize themselves with the facilities and methods of purchasing at all branches over a period of time, and fostering a sense of unity and common interest.

In summary, the trend in purchasing organization is to concentrate buying activities and responsibility close to the point of use and management responsibility. But this is coupled with a sound appreciation of the staff services that a strong central department can provide for the individual buyers at all locations, as well as for the company as a whole.



Birth of A 20 Ton Sailor

Looks like any other *seventy-two* inch steel ingot—but is it? Trained down to fighting weight, it is a *twenty* ton sailor aboard an oil tanker . . . a ship's shaft to turn propellers against the heavy seas of the North Atlantic. Its "trainers" . . . experts in forging, heat treating, machining . . . men of long experience in quality control carefully check every step of the way to make sure

it holds its "rating" in the ship's company. Steel forgings and castings for naval and maritime fleets are completed here from raw materials to shipping dock . . . have been for over three quarters of a century. Another of the many important reasons you can consult with us on *your* Steel Forging and *your* Steel Casting Components with full confidence.

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MEMBER AMERICAN IRON AND STEEL INSTITUTE

Even "ironclad" contracts are voidable under certain circumstances. They often can be wig-gled out of if unforeseen conditions arise which make their fulfillment impossible or extremely difficult.

That Contract Can Be More Flexible Than You Think

By Albert Woodruff Gray

CONTRACTS for the purchase of merchandise by a California buyer had been made with an Arkansas manufacturer a few months before the Pearl Harbor attack in December, 1941. For the refusal of the manufacturer to ship the goods as agreed suit was brought by the purchaser.

Among the defenses interposed by the manufacturer was that the frustration of the object of the contract by the action of the United States immediately following the outbreak of the war with Japan had prohibited performance. In its refusal to sustain this attempted justification of the failure of the seller to deliver these goods as agreed the Federal court said of the principles underlying this defense of commercial frustration,

"Under the doctrine of frustration as relieving a party from its contractual obligations, performance remains possible but is

excused whenever an event not due to the fault of either party supervenes to cause a failure of consideration or destruction of the expected value of performance.

"Courts and text writers agree that where performance of a contract is rendered temporarily impossible by the act of the sovereign, the result on the obligation of the parties depends upon whether performance after the delay caused by the act of the sovereign would be substantially different from that contracted for.

Changed Conditions

"It is said that a temporary impossibility of performance of a character which, if it should become permanent, would discharge a promisor's entire duty, operates as a permanent discharge if performance after the impossibility ceases, imposes a substantially greater burden on the promisor than that intended by the parties.

Otherwise the duty of performance is suspended only while the impossibility exists.

"Necessarily the application of these rules in a given case must depend upon the intention of the parties as shown by the terms of the contract and the circumstances surrounding its execution. The doctrine of frustration of contracts is based upon considerations of equity and justice as between the parties."

Then of the application of this rule to the circumstances in this instance the court added, "There is a complete failure to show a valid excuse for nonperformance by the seller of any of the contracts sued on. The effect of the action of the United States in prohibiting performance from December 7 to December 31, 1941, was to extend the time of performance of all contracts for both buyer and seller. Both buyer and seller were not only able but bound to perform within the time of performance as extended by the action of the sovereign."

Foreign Intervention

In another instance of this same character a contract had been made for the sale and shipment of 500 tons of copra to Colombia from California and 200 tons had already been delivered when Colombia refused permission for further importations. Here, holding that such action by the Colombian government ended the contract the California court said of this law, "The doctrine has been

...and you can be sure the Airline regrets the inconvenience caused by not completing our contract.

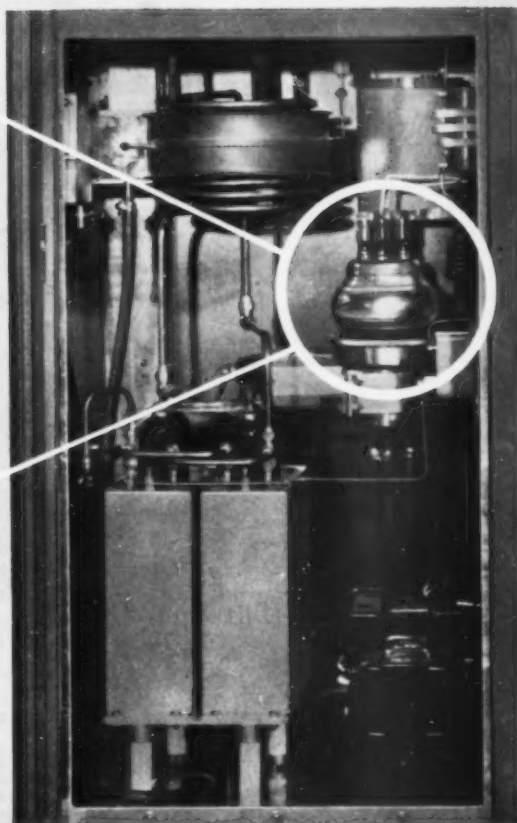


A CONTRACT DOESN'T HAVE TO BE COMPLETED WHEN THAT WHICH IS ESSENTIAL TO ITS COMPLETION IS DESTROYED.

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on Inquiry Card—Page 32—

PURCHASING

Now...get all the power you pay for!



General Electric's new GL-7085/356 is full-power replacement for the 356/5771 and 880*!

Your heater-tube replacement dollars buy full power output when you install the new General Electric GL-7085/356. You get top-rating plate voltage and current at high frequencies . . . tested into every tube before shipment!

Also, you get strong, shock-resistant tube construction (see facts at right). You get the dependability and manufacturer responsibility that are associated with every G-E product.

Heater performance and production in your plant will benefit as soon as you put this new, sturdy, full-power General Electric tube to work. Phone your G-E tube distributor for fast service! *Distributor Sales, Electronic Components Division, General Electric Company, Owensboro, Kentucky.*

* With Type 880 only, a filament-transformer adjustment is required. Modification instructions are supplied.

You can count 100% on these General Electric GL-7085/356 ratings:

- At 25 megacycles, max DC plate voltage is 12.5 kilovolts; max plate input, 60 kilowatts.
- Tube will dissipate 22.5 kilowatts with water flow of 12 gallons per minute.

You can rely on full-power tube performance day-in, day-out, because:

- New GL-7085/356 is ruggedly built—has strong, self-supporting filament, plus fernico glass-to-metal seals that withstand stresses.
- Every tube is factory-tested by General Electric for top-rating performance at 25 megacycles—must prove it can do the job you expect of it.

Progress Is Our Most Important Product

GENERAL  ELECTRIC

11-12-101

You can't quit.
The deal was
for you to move
the mountain



Yeah. But that's
impossible.



IF YOU CONTRACT TO DO SOMETHING DIFFICULT, OR EVEN IMPOSSIBLE, YOU'RE STILL LIABLE FOR FAILURE TO PERFORM.

given wider scope and application in the cases following the World War after 1914, where contracts for the sale of specific materials and for the shipment on named vessels or to specific ports were made impossible of performance by war restrictions, embargoes or seizure of the vessel.

"Frustration is explained in theory as a condition or term of the contract in order to supply what the parties would have inserted had the matter occurred to them, on the basis of what is fair and reasonable, having regard to the mutual interests concerned and of the main objects of the contract.

"It is irrespective of the individuals concerned, their temperaments and failings, their interests and circumstances. It is really a device by which the rules as to absolute contracts are reconciled with a special exception which justice demands."

This statement the court supplemented with a quotation from a recognized textbook writer,

Implied Conditions

"Where, from the nature of the contract it is evident that the parties contracted on the basis of the continued existence of a person or thing, condition or state of things to which it relates, the subsequent perishing of the person or thing or cessation of existence of the condition will excuse the performance, a condition to such effect being implied in spite of the fact that the promise may have been unqualified."

Employment of this rule by the

courts has by no means been confined to wartime conditions and government control during national emergencies. Into contracts in many instances, courts have injected an implied condition that performance can be demanded only so long as the conditions contemplated at the time of the execution of the contract, continue.

How Applied

After a contract had been made by a Colorado mining company for the treatment of ore by a mill the mining company made a five year contract for hauling its ore to the mill. Later the operator of this mill became bankrupt, the mill closed and no further facilities for the treatment of this ore were available.

In the suit brought by the trucker against the milling company for breach of contract judgment was rendered by the Federal court in favor of the mining company. Conditions assumed when the trucking contract had been made, that is, the continued operation of the mill, had ceased.

"It is well settled by the adjudicated cases in England and the United States," said the Federal court, "that where parties enter into a contract under the assumption that some particular thing essential to its performance will continue to exist and be available for the purpose and neither agrees to be responsible for its continued existence and availability, the contract must be regarded as subject to an implied condition that if, without fault of either party the particular thing ceases to exist or

be available for the purpose, the contract shall be dissolved and the parties excused from performing it."

Another feature of this commercial frustration doctrine is the distinction made by the courts between circumstances that effect the permanent cancellation of contract obligations and those that merely suspend performance for a measured period in which the frustrating condition continues.

Shortly after a contract for the construction of an electric power plant had been made by a Minnesota village in 1942 the War Production Board at Washington refused to permit performance. Suit was brought by the village against the contractor for a judgment declaring this contract to be in full force and that its performance had merely been postponed by these governmental restrictions.

On its part the contracting company contended that by virtue of the frustration consequent on these governmental restrictions the contract was at an end.

"An excusable temporary impossibility of performance on the part of the contractor existed because of governmental priority regulations," said the Minnesota court. "After the cessation of its excusable temporary impossibility the contractor would have been compelled to render performance substantially different from what it had contracted for because of changing costs.

Excusable Delay

"We believe that under the facts and circumstances of this case it is only fair to say that an excusable delay which made it impossible for the contractor to commence construction until more than five years after the contract was signed, should also excuse it from performance, especially in view of the unprecedented and therefore unforeseeable conditions which developed not only in the United States but throughout the world during that time.

"In arriving at this conclusion we are not attempting to change the well established rules which provide that inconvenience and increased costs of compliance ordinarily will not excuse performance. During this period of five



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APRIL 14, 1958

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years more unprecedented conditions arose and changes occurred throughout the world than during any similar period in history and it would be unfair to say that this contractor or anyone else should have foreseen or anticipated them as early as the date the contract was made."

To this statement the court added a quotation from a recognized legal text book writer, "The essence of the modern defense of impossibility is that the promised performance was at the making of the contract, or thereafter became, owing to some extreme or unreasonable difficulty, expense, injury or loss involved, impracticable rather than that it is scientifically or actually impossible.

"While the mere fact that performance of a promise is made more difficult or expensive than the parties anticipated when the contract was made, will not ordinarily excuse the promisor, as is shown by cases too numerous to mention, nevertheless there are other decisions allowing an excuse wherever greatly increased difficulty had been caused by facts not only unanticipated but inconsistent with the facts that the parties obviously assumed to exist or to be likely to continue.

"The true distinction is not between difficulty and impossibility. A man may contract to do what is impossible as well as what is dif-

ficult, and be liable for failure to perform.

"The important question is whether the unanticipated circumstance has made performance of the promise vitally different from what should reasonably have been within the contemplation of both parties when they entered into the contract. If so, the risk should not fairly be thrown upon the promisor."

While, as is suggested in this decision, circumstances may occur that will justify a postponement of performance although the obligation to perform continues until the cessation of the obstructing occurrences, a permanent change of conditions may often establish a corresponding permanent release of performance.

Property Destroyed

Under an Indiana contract a manufacturer had undertaken to "furnish, fabricate and erect" two alcohol storage tanks. After the tanks had been delivered and during their erection both were destroyed by an explosion on the premises of the purchaser. In its decision that by the destruction of this property the contract was at an end the Indiana court said,

"The original contract clearly indicates that the manufacturer agreed, not to furnish materials and labor for the construction of two tanks but that it agreed to

furnish, fabricate and erect two tanks which would meet the specifications prescribed in the contract and that it would not be entitled to payment of the agreed price of the tanks until they were completed, tested and erected.

"Both parties to the contract were released from their respective obligations by the destruction of the building in which the tanks were to be erected and each party was left to bear whatever losses it had suffered."

This rule of commercial frustration has been summarized by a Connecticut court in an action to recover damages for the breach of a contract to purchase Russian rubles, entered into during World War I.

In sustaining a judgment against the buyer on the ground that the embargo upon the importation of Russian currency was known to the contracting parties at the time the agreement was made, and that performance of purchase contract was postponed until the lifting of that embargo, the court said,

"Since the middle of the last century at least the courts in England and in this country have modified the rigid rule upon the theory that the event which rendered the performance impossible should be a matter of law, as a condition excusing performance.

A Modification

"While from the nature of the contract and the surrounding circumstances the parties from the beginning must have known that it could not be fulfilled unless when the time for fulfilment arrived some particular thing or condition of things continued to exist, so that they must be deemed, when entering into the contract, to have contemplated such continuing existence as the foundation of what was to be done. In the absence of any express or implied warranty that such thing or condition of things shall exist, the contract is to be construed as subject to an implied condition that the parties shall be excused in case, before breach, performance becomes impossible or the purpose of the contract frustrated from such thing or condition ceasing to exist without default of either of the parties."

REFERENCES

- Pacific Trading Co. v. Mouton Rice Milling Co., 184 Fed. 2d 141, Arkansas
Johnson v. Atkins, 127 Pac. 2d 1027, California
Parrish v. Stratton Cripple Creek Mining & Development Co., 116 Fed 2d 207, Colorado
Williston: Law of Contracts, vol. 6, Sec. 1931
Village of Minneota v. Fairbanks Morse & Co., 31 N.W. 2d 920 Minnesota
Rossville Alcohol & Chemical Corp., v. Steel Const. Co., 8 N.E.2d 1016, Indiana
Straus v. Kazemekas, 124 Atl. 234, Connecticut
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4

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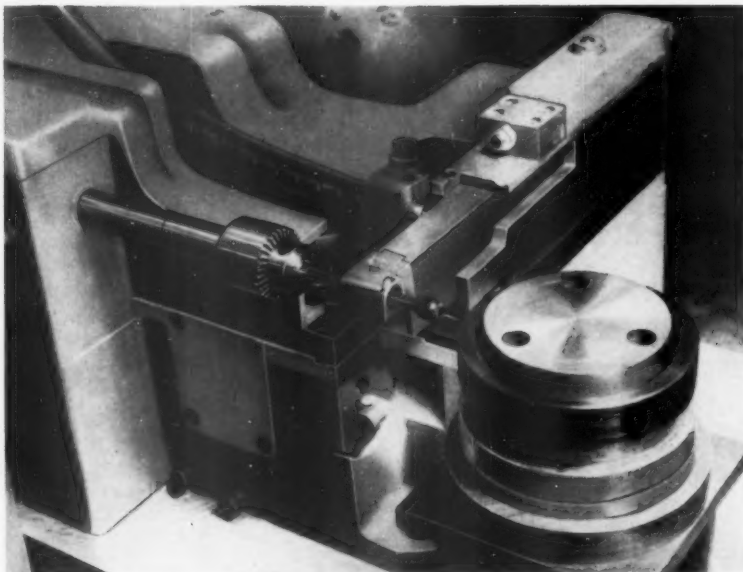
Products and Ideas

2500 Socket Set Screws Installed Per Hour

A NEW MACHINE automatically feeds, inserts and tightens socket set screws ranging in diameter from No. 6 (approximately 0.138 in.) up to 3/8 in. in lengths up to 3/4 in. It can make up to 2500 complete installations an hour in as many different product assemblies. This is four to five times the rate possible with high-speed manual power tools.

The new machine will fit into any type of assembly operation. When installed for automatic operation, it will act as a component of a fully automated assembly line. Set up for semi-automatic operation, the machine will install set screws in parts fed to it by hand. It can also be operated manually, one screw at a time. The machine, called the Setomatic, is a product of Standard Pressed Steel Co., Jenkintown, Pa.

Write No. 30 on Inquiry Card—Page 32



Business end of new machine that automatically inserts socket set screws.

Storage Unit Insures Production Line Flow



This high-capacity storage unit is a true demand-feeding system.

A HIGH-CAPACITY demand-feed storage unit for "parts that can roll" has been developed for use in automated processing lines. The unit consists of gravity part-retaining tracks, fed from integrated parts elevators. Capacity of the unit ranges from 1500 parts (2 1/8-in. dia. x 1 1/8-in. wide) to 3000 (1 3/8-in. dia. x 1 1/8-in. wide) parts. The unit has a bypass track that permits direct passage of parts through the unit. Another feature is the built-in counters that provide a running parts inventory. Two five-digit counters are used—one tabulating "parts in" and the other "parts out."

Parts are fed from a distribu-

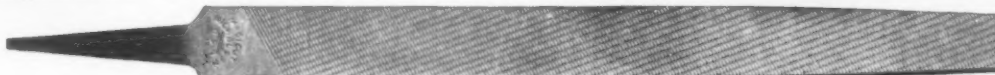
tion system to an entry at the lower right end of the unit. From here they enter a parts elevator and are raised to the top of the cabinet where they roll into the first section of zig-zag tracks. Each part traverses the full complement of tracks, rolling from top to bottom, and is then re-elevated for entry into the second section, etc. Parts leave the unit from an exit chute at the upper left end of the cabinet.

Total weight of the unit is about 4000 lbs. Floor space requirements are 3 x 8 ft. The manufacturer is Gear-O-Matic Division, Michigan Tool Co., Detroit 12, Mich.

Write No. 31 on Inquiry Card—Page 32



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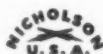
So he wrote a treatise on files and their proper selection and use. Later we condensed this and published it as "File Philosophy." We've printed 19 editions since then, always adding to its fund of facts. Today, "File Philosophy" is the universally accepted authority on filing.

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FACTS

about *Norgren*

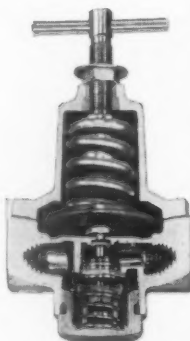
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Norgren Pressure Regulator on punch press at Shwayder Brothers, Inc., maker of Samsonite Luggage.

Reduce Air Costs... Cut Maintenance Costs

For any air operated equipment, there is one pressure at which it is designed to operate most efficiently. Above that pressure, equipment will wear excessively with no significant increase in output, and compressed air will be wasted. No matter what the application, you can choose a Norgren Pressure Regulator that will reduce line pressure to the desired working pressure. Results will include longer equipment life, lower maintenance costs, less down-time and savings in compressed air costs.



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Products

Carbide Gun Drills Precise Holes from Solid

The Star Cutter Co., 34500 Grand River Ave., Farmington, Mich., has on the market a line of single flute gun drills for drilling precision holes from the solid in a single operation. The drills can be used for producing close-tolerance, smooth, long or short holes in ferrous and non-ferrous parts. They are designed for operation on machine tools equipped with pressurized coolant systems in conjunction with a drill bushing. They are available in two designs: for hole diameters up to $13/16$ ", a solid carbide tip design is used; for holes above this and up to $1\frac{1}{2}$ " diam, the drills are of insert carbide tip design.

Write No. 32 on Inquiry Card—Page 32

Container Eliminates Hanging Up Anodes



Hanging up of anodes employed in plating operations can be a thing of the past. This is the result of a new type of anode container recently developed. Of welded construction, it is of the "basket" type with its vertical members and supporting rings arranged to provide maximum weight distribution in supporting the heavy anode loads. It is manufactured in lengths to meet each user's requirements and in standard diameters of $2\frac{1}{4}$ " by Equipment Div., Wagner Bros., Inc., 7800 Dix Road, Detroit, Mich.

Write No. 33 on Inquiry Card—Page 32



This planishing roll runs as hot as 300° F. Its durable HYPALON cover has processed millions of yards of vinyl floor covering.

HYPALON® Calender Roll Outlasts Rubber 15 to 1

Congoleum-Nairn reports HYPALON synthetic rubber gives 7 months' continuous service in processing hot flooring material. Rubber roll failed in 2 weeks.

Delaware Floor Products Division of Congoleum-Nairn, Inc., uses a HYPALON planishing roll on its calendering machine to help give vinyl flooring material a high gloss. The HYPALON roll presses hot plastic sheeting against a polishing roll. Surface temperatures run as high as 300° F. The machine operates 24 hours a day, 5 days a week.

Due to the extreme heat, abrasion, and attack of plasticizers and com-

pounding ingredients, the rubber planishing rolls used previously lasted only two weeks before surface regrounding became necessary. The new HYPALON covered roll was installed in November, 1956. Since then it has been reground three times . . . twice because of accidental damage. The third time—under normal operating conditions—the HYPALON roll gave 7 months' continuous service . . . 15 times that of ordinary rubber.

This marked increase in service life is another example of HYPALON's durability in the face of continued heat and abrasion. HYPALON synthetic rubber has the added advantage of complete resistance to ozone. It has

excellent tensile strength and retains its flexibility in temperatures as low as -40° F. It does not support combustion, and can be compounded in white or a complete range of colors that remain stable under exposure to sunlight and weather.

The next time you replace or buy a rubber product, consider HYPALON. See how it will reduce your maintenance and operating costs. The technical representative from your rubber goods supplier can show you the benefits of HYPALON—also of neoprene, the synthetic rubber made by Du Pont for 25 years. For more information, just clip the coupon . . . now, while you're thinking about it.

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CORPORATION - KOKOMO, INDIANA

The differences in chain link fence are spelled out by Continental's 14 distinct features, such as stronger, more rust resistant KONIK steel, and heavier H-section line posts. These features add up to extra protection because of extra strength, and lower per-year cost because of longer fence life without maintenance.

For More Information Write No. 215 on Inquiry Card—Page 32

Products

Automatic Wrench



The first automatic adjustable wrench has just been placed on the market. It requires no adjustment other than simply turning the knurl, as in the case of an ordinary adjustable wrench. There are no gadgets, levers or buttons. As the knurl is turned, jaw openings are held fast so that they cannot change position. The wrench is available in the five most popular sizes, 4", 6", 8", 10" and 12". It is a precision made product, forged from fine alloy steel. It is manufactured by Proto Tool Co., Dept. JPN, 2209 Santa Fe, Los Angeles, Calif.

Write No. 34 on Inquiry Card—Page 32

High Speed Grinding Spindle



With a spindle speed range of 60,000 to 100,000 rpm, infinitely variable, a high precision grinding spindle is now available that is most economical in its use of air. Ruggedly constructed, it is equipped with an electric tachometer and automatic reaction valve control of air supply, torque and rpm for peak performance under all operating conditions. A variety of collets and quills is available. The spindle can be procured from Homestead Inc., 9 Addison St., Larchmont, N.Y.

Write No. 35 on Inquiry Card—Page 32

PURCHASING

Count on *Continental* to meet special fastening problems with specialized cost-saving experience

Continental Assembly Engineers' Specialized approach to fastener trouble-shooting assignments gets you the right answer promptly, with the biggest cost savings — for two reasons.

First, since Continental can supply more types of standard fasteners, from stock, their recommenda-

tions are unbiased. They can tell you if some "standard" you've overlooked will meet your needs.

Second, if a "special" is the best answer, you can rely on Continental's unlimited experience to design and produce a fastener that will meet all specifications at the lowest possible cost.



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When consulted by a chain saw maker on the problem of screws vibrating out, Continental Assembly Specialists had the answer in HOLTITE® NYLOK. Two of the several types of machine screws furnished, all fitted with the resilient nylon plug, are illustrated. These NYLOK screws do not loosen in spite of extreme vibration, keep the saws "on-the-job". Previous customer complaints of high maintenance costs were eliminated.

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"Special" attention like this will pay off for you . . .

It costs you nothing to talk to a Continental Assembly Specialist. And, as soon as he digs into your problem, you'll see what we mean by "specialized experience". For prompt service, write or phone: Continental Screw Co., 457 Mt. Pleasant St., New Bedford, Mass.

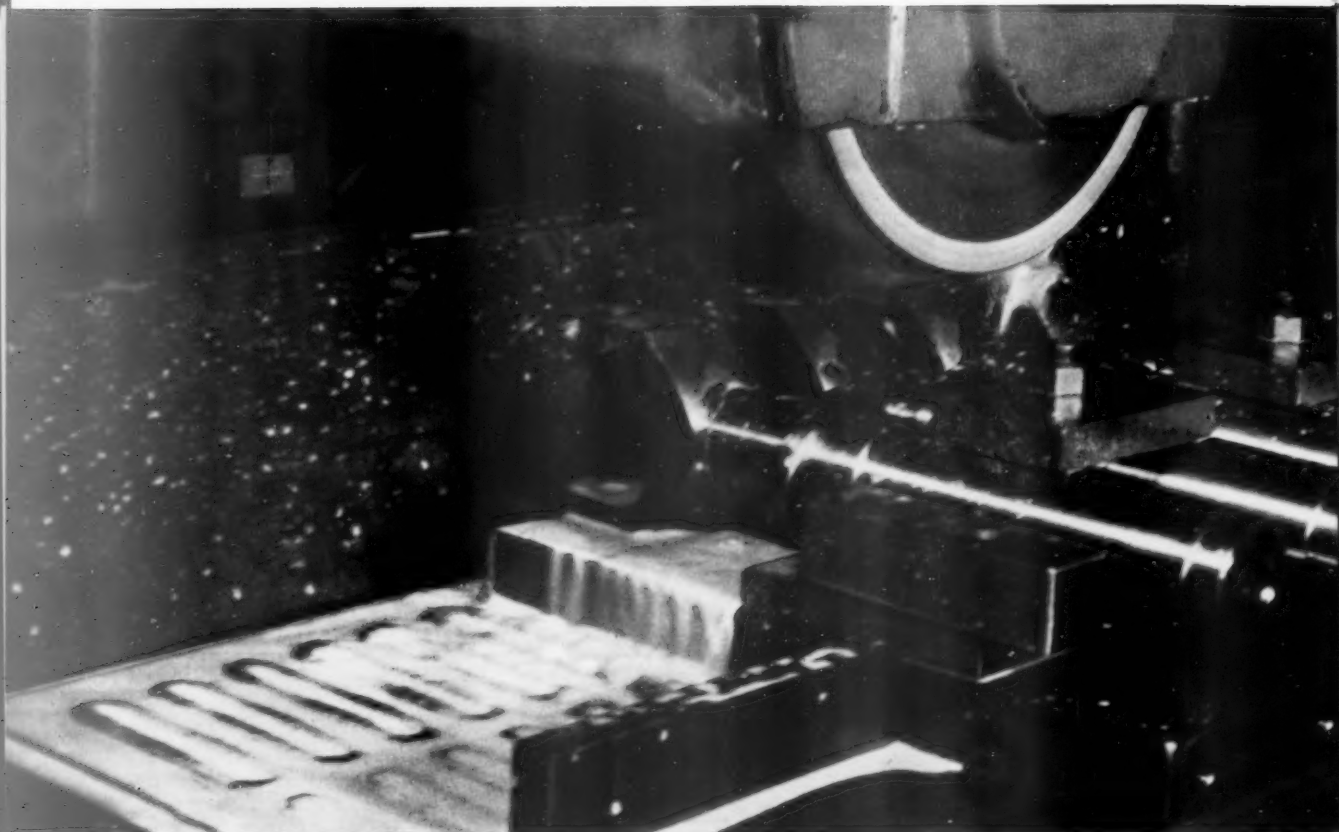


MEMBER
SCREW RESEARCH
ASSOCIATION

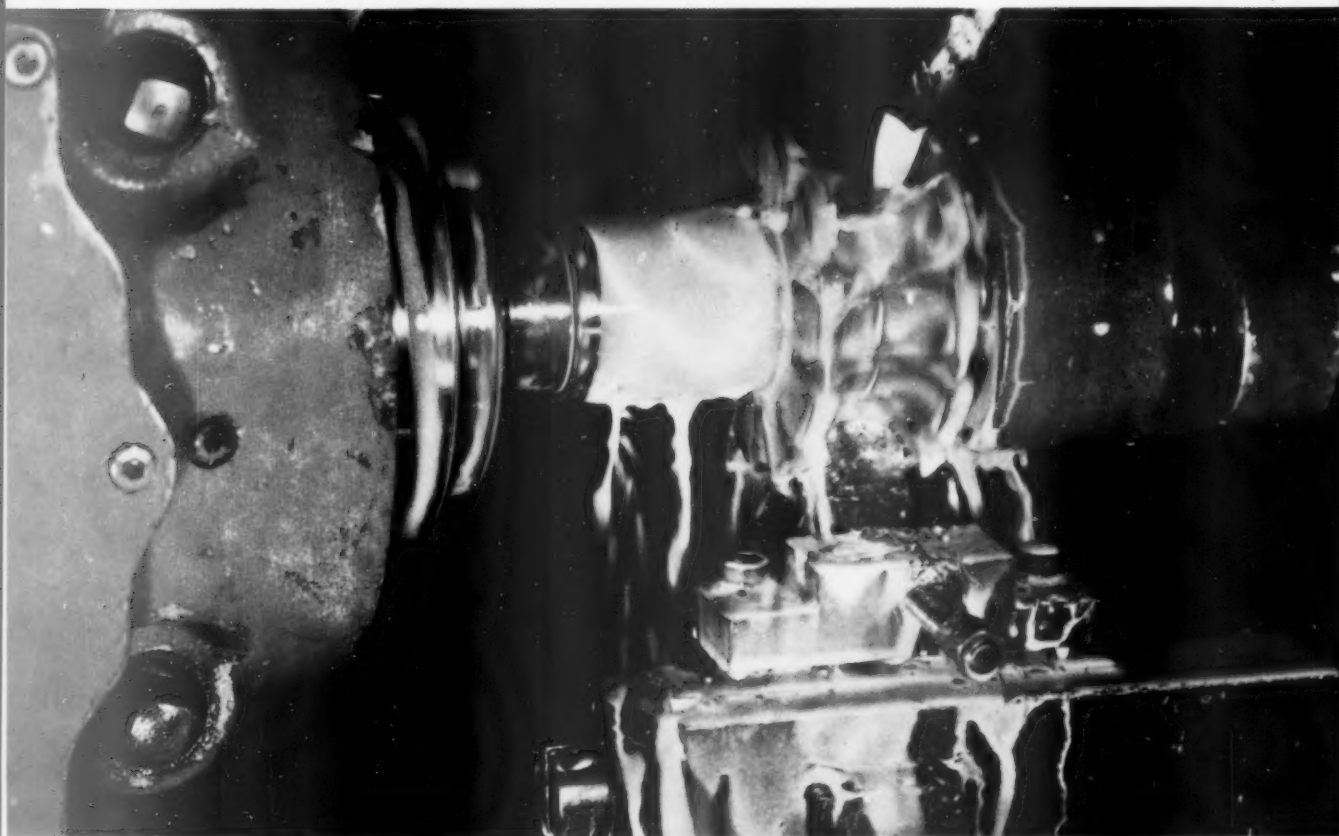
CONTINENTAL HOLTITE FASTENERS

HOLTITE PHILLIPS AND SLOTTED HEAD
WOOD • MACHINE • TAPPING • THREAD CUTTING • SEMS • NYLOK
HY-PRO PHILLIPS INSERT BITS AND HOLDERS





Wheels and machines stay cleaner with emulsions of new S.E.C.O. Also, finishes are better.



Emulsions of new S.E.C.O. allow faster cuts with less tool wear.

*Photos courtesy of
Peter Salmon Co., Glenside, Pa.*

NEW EMULSIFYING OIL KEEPS MACHINES CLEAN, PROTECTS AGAINST RUST, GIVES IMPROVED HARD-WATER EMULSION STABILITY

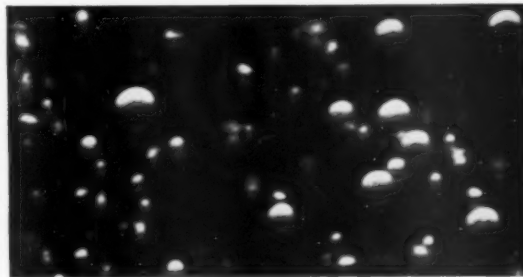
Emulsions of Sun's new S.E.C.O. (Sunoco® Emulsifying Cutting Oil) with smaller oil particle size give you the following benefits—

EMULSION STABILITY—In hard-water areas, impartial field tests show that emulsions of *new* S.E.C.O. stand up better under more severe conditions than those made with other regular emulsifying cutting oils.

DETERGENCY—The excellent wetting properties and detergency of *new* S.E.C.O. allow dirt and fines to settle quickly out of emulsions. Grinding wheels and machines stay cleaner.

RUST-PREVENTION—The smaller oil particle size in emulsions of *new* S.E.C.O. gives better metal wetting properties and increased protection against rust and corrosion. See photos below.

If you're a regular user of S.E.C.O., notice how much it has been improved. If you're not, find out what we mean about greater economy and improved production with *new* Sunoco Emulsifying Cutting Oil. Call your Sun representative, or write to Sun Oil Company, Philadelphia 3, Pa., Dept. I-9.



800x photomicrographs of 10% emulsions. *New* S.E.C.O. emulsion on left contains 8 times as many oil particles per unit volume as ordinary emulsion on right. Many minute particles in S.E.C.O. emulsion do not show at this magnification.



INDUSTRIAL PRODUCTS DEPARTMENT
SUN OIL COMPANY Philadelphia 3, Pa.

IN CANADA: SUN OIL COMPANY LIMITED, TORONTO AND MONTREAL

©Sun Oil Co., 1958

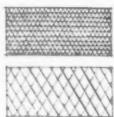
facts to consider when you're buying

WOVEN WIRE CONVEYOR BELTS FOR CONTINUOUS PROCESSING

Cambridge offers you



DIRECT FACTORY REPRESENTATIVES—Your Cambridge Sales Engineer is a specialist in woven wire belts—he can give you precise recommendations on belt or conveyor designs with a view toward providing you with the most economical belt consistent with long life and maintenance-free service.



A WIDE RANGE OF BELTS—9 basic weaves, any size or mesh. For processes involving high temperatures or acids, we'll furnish belts in any metal or alloy required. We'll also supply raised edges and any standard or specially designed surface attachments.



QUALITY MATERIALS AND WORKMANSHIP—Materials purchased from dependable suppliers, skilled factory men and the latest in machinery and fabrication techniques assure you of a better belt that will give longer service with a minimum of maintenance. Every Cambridge belt has smooth, uniform welds, accurate mesh count, exact mesh size.



SERVICE AND ENGINEERING LEADERSHIP—With the vast background of experience gained from years of service, our engineers and designers can design belt constructions best suited for special or new applications as they arise.

THE MOST COMPLETE REFERENCE MANUAL IN THE INDUSTRY—A partial list of contents includes: illustrations and descriptions of typical belt applications, flow sheets for automated processing, a complete section on metals and alloys, recommendations on selecting, installing and operating woven wire belts, illustrations, descriptions and metallurgical data on the various weaves, constructional features and examples of conveyor designs. For copy of this helpful book, simply write us direct.

For full details on how Cambridge can help you cut costs, maintain high product uniformity and increase production with continuous processing on Cambridge Woven Wire Conveyor Belts, talk to your Cambridge FIELD ENGINEER soon. He's listed in the phone book under "BELTING, MECHANICAL".



The Cambridge Wire Cloth Co.

WIRE
CLOTH



METAL
CONVEYOR
BELTS



SPECIAL
METAL
FABRICATIONS

Department AK
Cambridge 4,
Maryland

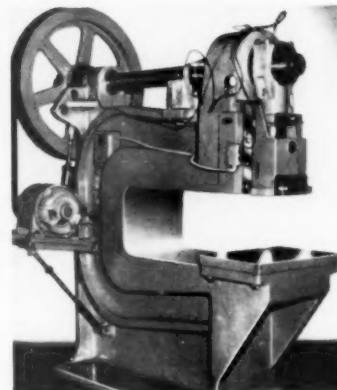


OFFICES IN PRINCIPAL INDUSTRIAL CITIES

For More Information Write No. 218 on Inquiry Card—Page 32

Products

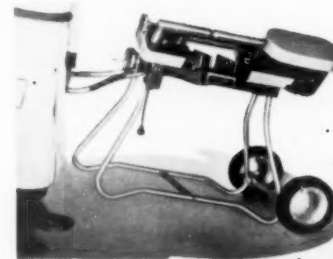
Deep Throated Press



A 45-ton heavy duty deep throated press with end flywheel is now available for industry. It has a 36" depth of throat, a 4" diameter shaft at pin bearing, 24 x 16" bed area, 14" open height and alloy cast frame. Carrying a 750 lb, 38" flywheel, total weight is 11,000 lb. It is made in plain and geared models and with pin or air clutch. The manufacturer is The Perkins Machine Co., Warren, Mass.

Write No. 36 on Inquiry Card—Page 32

Equipment Makes Metal Saw Full Portable



Heavy duty, rubber tired, ball bearing wheels and a smooth one-piece handle (optional equipment) are now offered to provide complete mobility for a "2 in 1" metal cutting bandsaw, one person can move from job to job without effort. When saw is in use, the handle is down out of the way, eliminating operation interference. Wells Mfg. Corp., 2400 Jackson Ave., Three Rivers, Mich., is the manufacturer.

Write No. 37 on Inquiry Card—Page 32



EXPERIENCE

the plus factor in

THOMSON CONTACT ASSEMBLIES

75 years of design and production experience stands behind every Thomson Electrical Contact and Automatic Contact-Setting Machine.

Electrical Contacts Division



JUDSON L.

THOMSON

MFG. CO., WALTHAM 54, MASS.

Since 1885

For More Information Write No. 219 on Inquiry Card—Page 32

APRIL 14, 1958

105

ADVERTISEMENT

Value Analysis On Fasteners and Small Parts

**Shows Cold Heading
Usually Cuts Costs**

This may well be the age of "Value Analysis". And, one of the most promising fields for such a cost saving study is fasteners and small parts. Actually one of the most important cost cutting developments in recent years is the increasing use of cold headed parts and fasteners in place of more expensive and structurally weaker screw machine products.

The more expensive bar stock used in the screw machine method results in considerable waste, whereas the waste is almost negligible in cold heading.

Another important consideration is the greater strength structure of parts made by the cold heading method. The blow of the heading tool causes the grain structure of the metal to flow in lines of greater strength.

The possibilities of cold heading are almost unlimited when used in conjunction with secondary operations. The tremendous savings in operation and material costs make it a must consideration when designing small parts either as fasteners or as integral units for manufactured parts. It has been a long time policy of John Hassall, Inc. to support their cold heading equipment with the latest methods of secondary manufacture. Machines for roll threading, slotting, drilling, tapping and many other operations are available for your profit.

Given complete specifications, including a drawing and an idea of the application, we can quickly tell you whether or not it will be advantageous to have your fastener or part **JOB-DESIGNED** by HASSALL. The remaining important aspect of our service to you is the ability to get into production quickly and make prompt shipment.

Write today for your copy of our new Catalog No. 106.

John Hassall, Inc.

P. O. Box 2268

Westbury, Long Island, New York

Manufacturers Since 1850

For More Information Write No. 220
on Inquiry Card—Page 32

106

Products

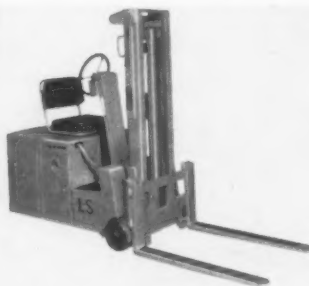
Kit for Quickly Replacing Potentiometers in Field



Designed for manufacturers of electronic equipment, a kit is now available from Micro Machine Works, Inc., Micro-Lectric Div., Roosevelt, L.I., N.Y., which provides an economical means of modifying or replacing potentiometers in the field. The kit contains taps, buss bar rings and all necessary tooling for on-the-spot precision drilling of tap holes, and for the installation of taps and buss bars in precision wire-wound potentiometers. The kit, though primarily designed for field use, can be modified for production requirements.

Write No. 38 on Inquiry Card—Page 32

Fork Lift Truck for Continuous Jobs



Lewis-Shepard Products, Inc., Waretown, Mass., has placed on the market its L-8 Model "H" fork lift truck, featuring a 24 v electrical system. It is particularly suited to situations requiring continuous operation and frequent stopping and starting. It is a rider-type truck, driven from a

Case histories prove

TM Triple-Safe ALLOY CHAIN

**increases safety,
cuts chain costs!**



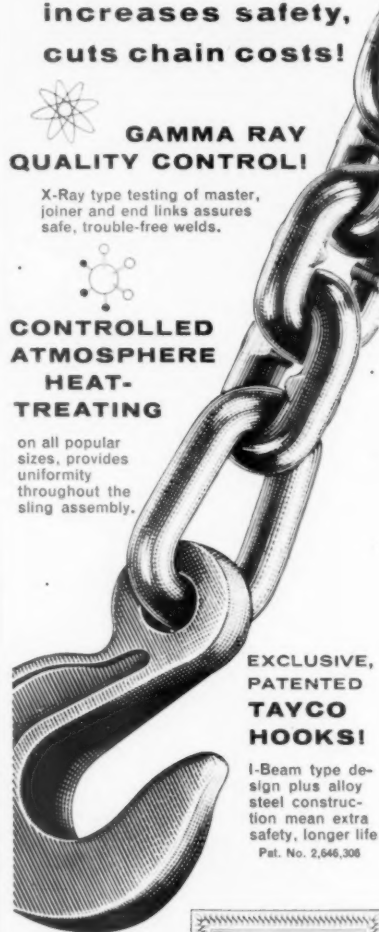
**GAMMA RAY
QUALITY CONTROL**

X-Ray type testing of master,
joiner and end links assures
safe, trouble-free welds.



**CONTROLLED
ATMOSPHERE
HEAT-
TREATING**

on all popular
sizes, provides
uniformity
throughout the
sling assembly.



**EXCLUSIVE,
PATENTED
TAYCO
HOOKS!**

I-Beam type design plus alloy
steel construction mean extra
safety, longer life!
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REGISTERED!
Certificate bears the chain's
guarantee... proof test...
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**CERTIFICATE
OF TEST**

Contact your nearest Distributor or write
S. G. TAYLOR CHAIN CO., INC.
Plants: Box 509, Hammond, Indiana
3505 Smallman St., Pittsburgh 1, Pa.

Chain is our specialty, not our sideline!



For More Information Write No. 221
on Inquiry Card—Page 32

PURCHASING

sitting position. Extremely maneuverable, it turns in its own length, with a turning radius of only $56\frac{1}{4}$ ". It stacks goods in aisles as little as $9\frac{1}{4}$ ' wide with a 48" load. It is available in four standard capacities: 1000, 1500, 2000 or 2500 lb.

Write No. 39 on Inquiry Card—Page 32

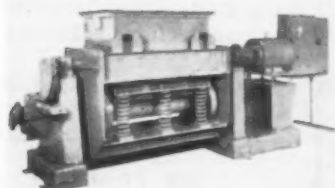
Silicone Rubbers Resist Compression Set



Availability of a new series of silicone rubbers with much greater resistance to compression set at high temperature is announced. They meet the need for more reliable oil seals and gasketing materials in automotive, appliance and aircraft or other applications involving high temperatures and high or constant pressures. Three types are currently available: S-2096U, S-2097U and S-2098U. They produce 60, 70 and 80 durometer (Shore A hardness scale) respectively. They have a serviceable range from -70°F to 500°F . They are a product of Dow Corning Corp., Midland, Mich.

Write No. 40 on Inquiry Card—Page 32

Vibrator Speeds Up Precision Finishing



It is claimed that a newly introduced vibrator for descaling, deburring, grinding, finishing, (Please turn to page 108)

APRIL 14, 1958

STANLEY Electric Tools



\$180⁰⁰

New 2-handle Unishear cuts 12-gage steel fast—gives added protection, too!

Stanley's new U2112 Unishear introduces a whole new standard of safety and handling ease in rolling mills. Its double-handle design allows the operators to push *and* pull the unit through the work. Added safety, too, because the operator needn't stand in the path of the end cut as backlash occurs. It cuts up to 12 feet per minute . . . cuts angles, notches and curves as small as $2\frac{1}{2}$ inch radius.

Whether you're engaged in a job-shop or high-production operation, Stanley self-feeding Unishears—portable or stationary—will give you:

- Fast, accurate cutting
- Practically effortless operation
- Increased production
- Extra safety

And look into Stanley's other service-tested power tools for industry. They're built to stand up long after other makes give in. Write for Cat. 57E. Stanley Electric Tools, Div. of The Stanley Works, 874 Myrtle St., New Britain, Conn.

Prices slightly higher in Canada

AMERICA BUILDS BETTER AND LIVES BETTER WITH STANLEY

STANLEY

This famous trademark distinguishes over 20,000 quality products of The Stanley Works—hand and electric tools • drapery, industrial and builders hardware • door controls • aluminum windows • stampings • springs • millings • strip steel • steel strapping—made in 24 plants in the United States, Canada, England and Germany.

For More Information Write No. 222 on Inquiry Card—Page 32

bright for life



thanks to **CHAMPION LIGHTMANSHIP**



MILLIONS OF LAMPS A YEAR . . .
ONE PLANT standard of quality control

With all manufacturing concentrated in the big, modern plant shown above, every Champion lamp is subjected to a single, high standard of quality control.

Uniform control like this is one more example of how Champion applies Lightmanship to make sure you always get all the light you pay for in Champion lamps.

CHAMPION LAMP WORKS
Lynn, Massachusetts
A division of Consolidated Electric Lamp Co.



For More Information Write No. 223 on Inquiry Card—Page 32

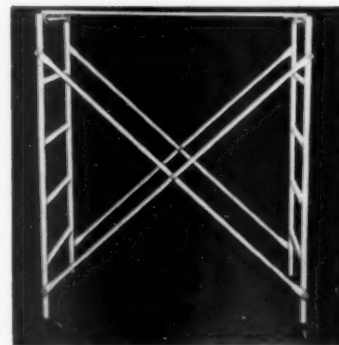
Products

(Continued from page 107)

coloring and burnishing metals, alloys and many plastics is exceptionally fast. The machine employs the principle of controlled vibration. It permits flexibility in vibrational frequencies and amplitudes. It will do everything that the conventional tumbling barrel will do—and more. In addition, it is said to be from 10 to 100 times as fast. Models range from 10 hp to 30 hp with bowl capacity from 6.92 to 17.50 cu. ft. The maker is Lord Chemical Corp., 2068 S. Queen St., York, Pa.

Write No. 41 on Inquiry Card—Page 32

Fold-Up Scaffold Sets Up In Minutes



An all-steel light-duty scaffold unit that folds compactly for moving or storage is on the market. The unit is 5' high. It has a 4' long plywood platform. Over-all width is 28". One man can easily set it up in a few minutes. By removing the braces from one ladder section, the entire unit folds neatly for hauling atop a car or in a station wagon. Platform can be removed from top rung and placed on any rung desired. This makes it suitable for many kinds of maintenance work. The manufacturer is Bil-Jax, Inc., Archbold, Ohio.

Write No. 42 on Inquiry Card—Page 32

**SEE PAGE 32
FOR
INQUIRY CARD**

BUSINESS IN MOTION

To our Colleagues in American Business . . .

Under today's competitive conditions, a manufacturer can't afford to take anything for granted. He continually seeks to improve even the so-called "perfect" product and to reduce production costs.

One such progressive manufacturer, in reviewing the materials and processes used in making their spherical roller bearing cages, sought the opinion of others. One of those "others" was Revere's Technical Advisory Service, which was called in to review the kind of brass that was being used in the cages and to study the problem first-hand. This meant consulting with the engineering department as well as observing the manner in which the bearing cages were being produced.

After a careful study recommendations were made. The result was the adoption of specification changes in the brass strip used which, in addition to improving the quality of their roller bearing cages, gave this manufacturer the following money-saving advantages: One bore pressing operation has been eliminated. Machining is more easily accomplished. Less machining is required. Tool life has been increased with some speeds increased up to 100% and feeds up to 30%.



Rework due to burrs has been greatly reduced. One step less is required in the deburring operation while savings through reduced cycle time for remaining deburring operations are up to 40%. Chips are small now . . . there is no "angel hair" to clutter work area. Life of punch used in notching roller bearing cage has been doubled. Now a run may be completed with-

out making tool adjustments due to sharpening tools. Machining speeds and feeds have been substantially increased over those in machining the former alloy. Die setters report that considerable work has been eliminated in setting up the tools used. All of which resulted in substantial savings in time and money.

This is still another eye-opening example of Revere supplying the metal that will do the best job

and with the greatest economy . . . be it brass, copper or aluminum or any one of their alloys. It is also another example of the many advantages of working closely with *your* supplier, whether it be through Purchasing, Production, Engineering or Design Departments, separately or collectively. It is one sound way to go about lowering production costs, improving manufacturing techniques and bettering *your* product.



REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

Executive Offices: 230 Park Avenue, New York 17, N. Y.



Each of the two illustrated troughs can carry as much cable as all of the paralleling conduit

Cope cable trough saves steel by the ton!

Problem. 100 miles of cable to be supported in a New Jersey power generating station.

Solution. A careful cost analysis of available methods and materials convinced plant engineers that Cope's expanded-metal cable trough was the best choice. Why? Among other reasons, it meant a saving of more than a ton of steel for every 60 feet of trough installed, as compared to conduit . . . a total saving in excess of 250 tons of steel for the 15,000 ft. of trough required for the completed job!

Here's How You Save. One 10 foot section of 24" width Cope trough supports as many cables as 16 lengths of 4" conduit and it only weighs 54 lbs., compared to 575 lbs. for this same amount of conduit. This adds up to real economy regardless of the size of your installation. Cope's expanded-metal cable trough simply uses less

steel to do the job and obviously this can mean substantial savings for you!

Cuts Labor and Maintenance Costs, Too. Design and construction features of lightweight Cope trough speed installation of space saving systems—even in the most cramped quarters. Easy-to-get-at trough simplifies cable inspection and repair . . . provides ready re-routing and facilitates system additions.

You save *three* ways when you specify Cope cable supporting equipment . . . trough, ladder or channel.

- LOWER FIRST COST
- LOWER INSTALLATION COSTS
- LOWER SYSTEM MAINTENANCE COSTS

Discuss these advantages for your installation with a qualified Cope representative—or write to T. J. Cope Division, Rome Cable Corporation, Collegeville, Pa.

T. J. COPE *Division*
ROME CABLE CORPORATION

For More Information Write No. 225 on Inquiry Card—Page 32

Products

Nibbles Away Its Cost in No Time



A portable air-powered tool, weighing 12 lb, can cut up to 10-gage stainless or 8-gage mild steel and 3/16" copper, brass or aluminum. It is said to pay for itself in one month. It does in one minute what took 30 minutes using old styled hand tools. In cutting, the nibbler utilizes a die and punch action. Each stroke of the tool removes a tiny slug of metal, which eliminates the distortion, burrs and elongation caused by a saw or shears. Nibbler is made by Fenway Machine Co., 3107 N. Broad St., Philadelphia, Pa.

Write No. 43 on Inquiry Card—Page 32

Chemical Milling Works to Close Tolerances



A new technique — chemical milling — removes metal from many delicate and intricate shapes that ordinary machine tools would be unable to handle. In many instances, such as in making parts for the electronics industry, chemical milling is the only means of producing contours and thicknesses, required by the designer. Under special conditions, the technique is currently producing parts with dimensional tolerances of $\pm .000$ inch. The technique is being exploited for industry by United States Chemical Milling Corp., 1700 Rosecrans Ave., Manhattan Beach, Calif.

Write No. 44 on Inquiry Card—Page 32

For More Information Write No. 226 on Inquiry Card—Page 32—

PURCHASING

ILLINOIS SETS THE PACE IN *BIG*

★ Here is progress-in-action to meet the fast-moving, ever-changing requirements for large gears in industry.

ILLINOIS GEAR has been meeting this challenge by constantly adding new, modern production facilities . . . the latest of which is the equipment illustrated here. It is the newest, largest and most modern of its kind in the world.

Spectacularly large, this precision gear cutting, hardening and testing equipment will handle spiral, Zerol and hypoid bevel gears up to 94" pitch diameter, 13" maximum face, .625 D.P. ($5\frac{1}{2}$ " C.P.) 2.875" tooth depth and hypoid pinions to 10" offset.

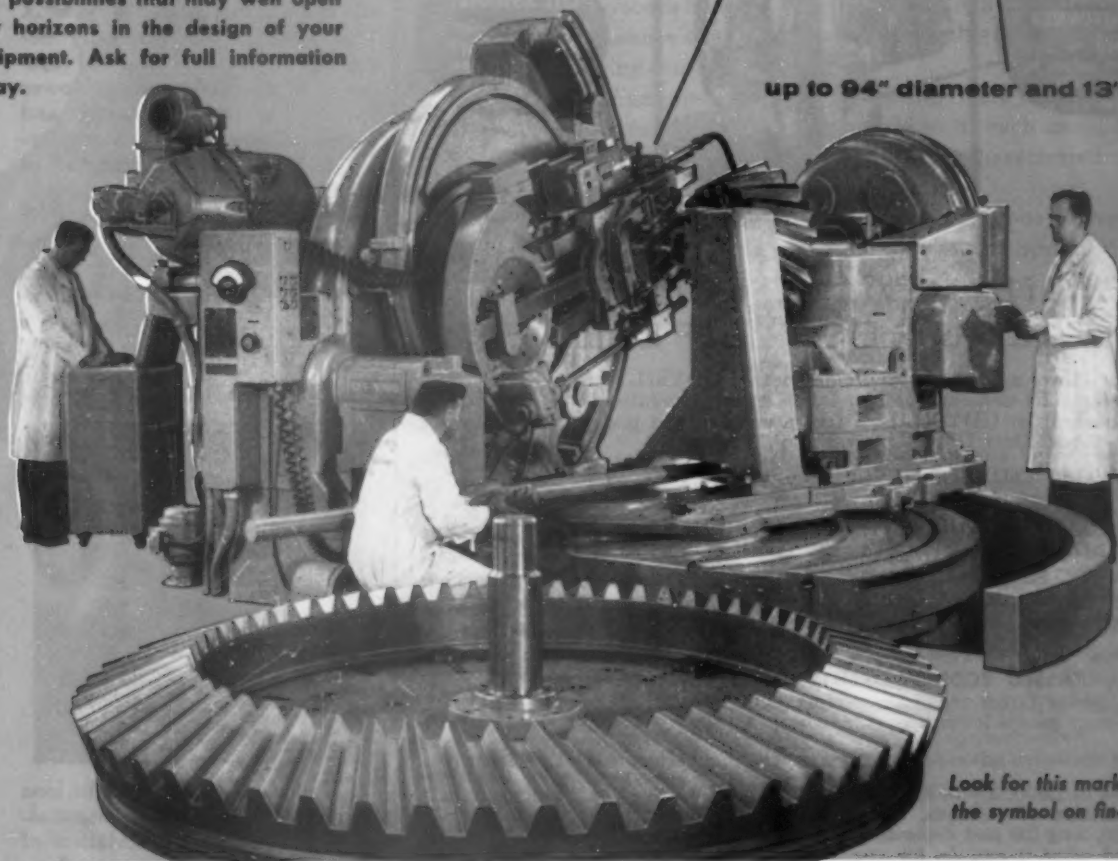
These large precision gears offer new possibilities that may well open new horizons in the design of your equipment. Ask for full information today.


SPIRAL BEVEL GEARS

ZEROL BEVEL GEARS

HYPOID BEVEL GEARS

up to 94" diameter and 13" face



Look for this mark 
the symbol on finer gears



Gears for Every Purpose ... one gear or 10,000 or more

ILLINOIS GEAR & MACHINE COMPANY

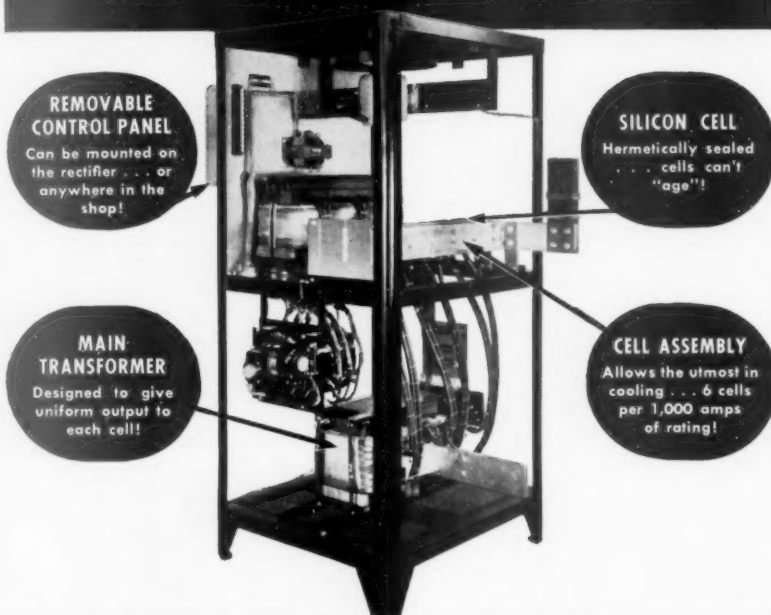
2108 NORTH NATCHEZ AVENUE • CHICAGO 35, ILLINOIS

NEW from UDYLLITE

UDYSIL

THE SILICON RECTIFIER

with BALANCED POWER



REMOVABLE CONTROL PANEL

Can be mounted on the rectifier . . . or anywhere in the shop!

MAIN TRANSFORMER

Designed to give uniform output to each cell!

SILICON CELL

Hermetically sealed cells can't "age"!

CELL ASSEMBLY

Allows the utmost in cooling . . . 6 cells per 1,000 amps of rating!

EFFICIENCY . . . FLEXIBILITY

THE LONGEST LIFE EVER!

You get all three advantages, and more, with a UDYSIL rectifier! Silicon, the amazing long life element, combined with a new, revolutionary BALANCED circuit, makes the UDYSIL Line the most advanced plating rectifier series ever developed. Only UDYSIL gives you . . .

- ★ **UNLIMITED CELL LIFE**—Hermetically sealed Silicon cells can't "age"—won't ever wear out!
- ★ **UNEQUALED DEPENDABILITY**—New BALANCED circuit power means UDYSIL can't "blow" stacks . . . no more uneven loading of cells!
- ★ **UNAFFECTED BY HIGH TEMPERATURE**—Inducted cooling allows high temperature operation with no loss of cell life, voltage or efficiency!
- ★ **UNIMPEDED APPLICATION**—UDYSIL rectifiers can be used in any plating bath. 4.2 ripple factor over the entire voltage range!
- ★ **UNSURPASSED ECONOMY**—UDYSIL offers you economy two ways! 92% power factor means lower installation costs . . . exceptionally high efficiency means lower operating costs!

All these exclusive advantages are yours when you select a UDYSIL rectifier.

Available in 1,000, 2,000, 3,000, 4,000, 5,000 and 6,000 ampere ratings with a wide selection of voltages, Udyasil rectifiers represent the ultimate in performance, long life and dependability. For the "inside" story on the UDYSIL Line and what it can do for you, contact your local UDYLLITE representative today, or write direct to:



detroit 11, michigan • world's largest plating supplier

Products

Super-Sensitive Ball Bushing



A new type of ball bushing is now in production for supersensitive application. It is the heart of accelerometers, G switches and other critical components of missile and aircraft guidance systems. The bushing was primarily designed to improve inertial systems. It has substantially lower friction, greater sensitivity and excellent repeatability characteristics. It has a bore diameter of .2500"; the nominal OD is .5000" and length is .750". It is made by Thomson Industries, Inc., Manhasset, N. Y.

Write No. 45 on Inquiry Card—Page 32

Wrought Iron, Resists Corrosion



An improved 4-D wrought iron has been achieved by substantially increasing the deoxidation of the base metal. Also, the phosphorous content has been increased in relation to the other material components while, at the same time, the fibrous silicate material is more voluminously and more evenly distributed

(Please turn to page 114)

For More Information Write No. 228 on Inquiry Card—Page 32→

PURCHASING



SAMSON
REG. U. S. PAT. OFF.
SPRING
WIRE

KEYSTONE STEEL & WIRE CO. PEORIA, ILL.

**... meets every
spring construction
requirement**

Samson Spring Wire—an up-to-the-minute product of Keystone Steel & Wire Company, with modern performance characteristics—is available to fulfill every spring construction.

Samson Spring Wire is custom made with the correct finish, temper and tensile to fit each use. Users like the uniform size and coiling characteristics of Samson Spring Wire.

We invite you to contact your Keystone representative for complete details on Samson Spring Wire. Call him today—or write direct.

**name your
need ...**

- Upholstery spring wire, coiling and knotting quality
- Upholstery spring wire for marshall pack units
- Special upholstery spring wire for use in automatic coiling and knotting machines
- Common lacing wire
- Special automatic lacing wire
- Spring wire for cross helical springs and for short tension springs
- High carbon wire for borders and braces
- High carbon wire for cold rolling into border and brace sections
- Wire for severe crimping or clinching upholstery spring construction

Keystone Steel & Wire Company
Peoria 7, Illinois



KEYSTONE
WIRE FOR INDUSTRY



These Nickel alloy experts CAN HELP YOU PRODUCE A BETTER PRODUCT

Proper selection and use of the Nickel alloys is an exciting challenge to the skills of Riverside-Alloy's technical service people. And the sum of these skills is available to you—at any time—simply by picking up the telephone.

Riverside-Alloy engineers will work closely with you in choosing the Nickel alloy best suited for your product, analyzing not only the application, but the *fabrication* problems, as well. Only then will they recommend a Riverside-Alloy Nickel with the precise properties of temper and toughness, of fatigue and corrosion resistance you require. And they'll supply it in the *form* you need, too, from a complete variety of strips, wires and rods.



For a free, detailed handbook of Riverside-Alloy Nickel alloys, write on your letterhead to ALLOY METAL WIRE WORKS, RIVERSIDE-ALLOY METAL DIVISION, H. K. PORTER COMPANY, INC., RIVERSIDE, N. J.

H. K. PORTER COMPANY, INC.

RIVERSIDE-ALLOY METAL DIVISION

For More Information Write No. 229 on Inquiry Card—Page 32

Products

(Continued from page 112)

throughout each cross sectional square inch of the metal. As a result, the new wrought iron has greatly superior resistance to many kinds of corrosive forces. These include those caused by severe industrial atmospheres, acid solutions, salt water and steam condensates. The producer is A. M. Byers Co., Clark Bldg., Pittsburgh 22, Pa.

Write No. 46 on Inquiry Card—Page 32

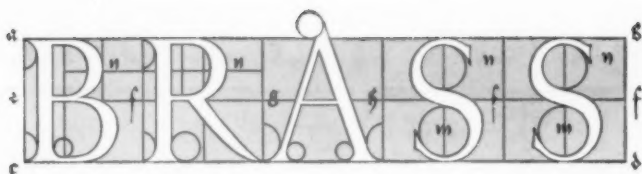
Self-Palletized Container



A self-palletized container eliminates the need for separate pallets. The container, trade-named "Lift-Pack", is internally-braced. Its expendability and extreme lightweight slash shipping and storing costs. It has proved ideal for shipping of bulk or granular products, delicate parts, breakable containers, etc. Its square shape stacks in minimum space. It may be closed with perfect security by low cost strapping, stapling or taping. It is made by The Titan Corp.

Write No. 47 on Inquiry Card—Page 32

**You need only one card
to request additional in-
formation on any item in
this issue. Use the reader
service page 32.**



...especially Western Brass...
has done...is doing...
and will do...many jobs better than
any other metal. Western Brass
is "tailor-made" for
each job.



WESTERN IS A TRADEMARK

* Sheet and Strip Specialists in Brass and Copper *

The man from Western is only a phone call away



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Grand Rapids • Indianapolis • Long Island City • Los Angeles • Milwaukee • New Haven • Philadelphia • Rochester • Rockford, Ill. • Saint Louis

For More Information Write No. 230 on Inquiry Card—Page 32

APRIL 14, 1958

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Office Equipment and Supplies



A new Electronic Computation System has recently been introduced by **Clary Corporation of San Gabriel, Calif.** Called the Clary ECS, the computation machine performs many of the functions of the complicated giant "electronic brains" and was designed to fill the gap between these giants and the mechanical calculators. The completely transistorized unit, built into a standard office desk can be operated from any ordinary 110-volt wall plug. In addition to its many commercial uses, the new machine will solve many scientific problems and all straight arithmetical calculations. A magnetic drum memory storage is used in developing results of a computation, storing constants, or storing the results of a calculation for later use in developing further computations.

Write No. 48 on Inquiry Card—Page 32



A new stencil ink packaged in an aerosol can is now available from **Faymus Division of Bankers**

and **Merchants, Inc., Chicago.** The new spray ink comes in four colors: black, green, blue, red and a special erasure color, obliterating tan. A ballbearing sealed within the container keeps the ink from drying out and lumping to assure use of all the ink.

Write No. 49 on Inquiry Card—Page 32

A new 116-page, loose-leaf catalog is being offered by the **Elbe File & Binder Company, Inc., Fall River, Mass.** It lists over 2500 stock items and has special price schedules for hundreds of made-to-order binders.

Write No. 50 on Inquiry Card—Page 32



Porta-File "Imperial" was introduced recently as an addition to the office equipment line of **Hamilton-Skotch Corporation of Hamilton, Ohio.** The filing box is of extra sturdy, heavier-than-usual metal construction, and finished in mahogany. More than 800 documents can be filed in it. It comes complete with index folders and lock and key.

Write No. 51 on Inquiry Card—Page 32

A new booklet entitled, "**Friden IDP Products in Action,**" is now available from the **Friden Calculating Machine Co., San Leandro, Calif.** The booklet describes integrated data processing applications involving not only Friden products but many other tape-operated machines. Such functions as purchase order writing, order invoice writing are all illustrated with flow charts and concise descriptions.

Write No. 52 on Inquiry Card—Page 32



Just peel off the treated **Glassine backing paper** on pressure-sensitive print jobs and you've got a label, tag or sign that will stick to any smooth, dry surface. The adhesive material was pioneered by **Kleen-Stik Products, Inc.** and have a wide choice of papers, with various adhesives, available to printers. For ideas on how Glassine can solve other problems demanding smoothness, strength and impermeability the **Glassine & Greaseproof Manufacturers Association of New York** has published a free booklet entitled, "**The Wonder Papers.**"

Write No. 53 on Inquiry Card—Page 32



A capillary-controlled **drafting pen** which permits use of ordinary ink on any drawing surface is now offered by the **Ozolid Division of General Amiline and Film Corporation, Johnson City, New York.** The Riefler Grafika will draw a line in excess of 1,000 feet without refilling. Rubber-base, fountain pen, colored or India inks, in addition to water colors, can be used with the pen on any medium including paper, acetate, cloth or glass.

Write No. 54 on Inquiry Card—Page 32



D. J. DEPREE, President of Herman Miller Furniture Company, declares:

"Today's purchaser looks for beauty and function"

"The simple, uncluttered lines of these classic pieces are an example of functional beauty. Another example is the paper chosen for our business letterhead. Crisp, textured cotton fiber bond is strikingly handsome. And in many other business uses, cotton fiber papers combine beauty with outstanding performance."

For practical reasons . . . as well as prestige . . . generations of successful businessmen have chosen cotton fiber papers.

Durable, white fibers of purest cotton, crafted by skilled hands and precision equipment, create papers well known for beauty, strength, permanence. These qualities stand out in business and social stationery, onion skin, index, ledger, drawing, tracing and blue print papers.

Make sure the papers you use are made with cotton fiber—25% minimum up to 100% in the finest grades.

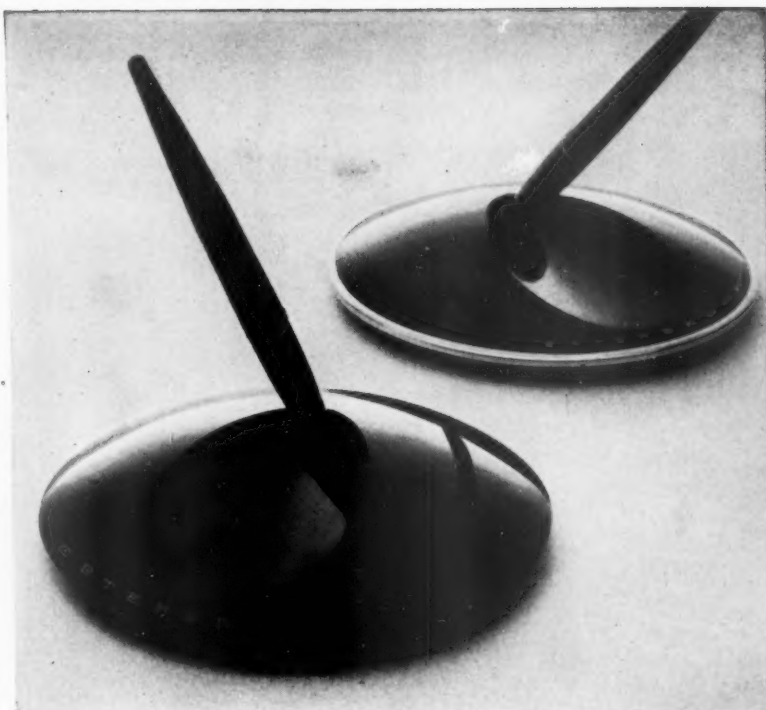
©Cotton Fiber Paper Manufacturers, 122 E. 42nd St., N.Y.C.



BETTER PAPERS ARE MADE WITH COTTON FIBER

LOOK FOR "COTTON" OR "RAG" IN THE WATERMARK OR LABEL

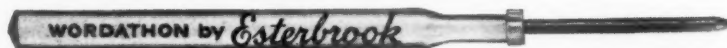
For More Information Write No. 231 on Inquiry Card—Page 32



writes 6 months without refilling

This handsome **RECORDER*** ball point desk set gives truly dependable service—superb writing quality.

Writes instantly—at a paper's touch. Once it starts writing it doesn't stop—writes for a full six months in normal use without requiring a refill. Steady, sure service, too—no ink "flooding" or "starving." The strikingly modern Esterbrook **RECORDER** comes with red, blue or black ink . . . fine or medium point. Available in black or your choice of high fashion colors. Only \$2.95 at list for complete set in black—\$3.95 for colors and black chrome-banded de luxe model. In office or home it decorates any desk.



New **WORDATHON*** Refill Cartridge writes up to five times longer than ordinary ball point refills, gives a full six months' service—only 69¢.

*Trade Mark

RECORDER BALL POINT
DESK SET BY *Esterbrook*

For More Information Write No. 232 on Inquiry Card—Page 32

Office Equipment

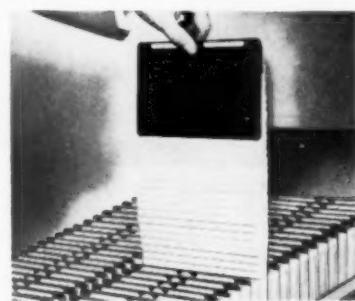


A new **Swedish-made type-writer**, incorporating new design and construction innovations, has been introduced by **Facit, Inc. of New York**. The new machine, engineered for greater typing ease and simplified servicing requirements features improved touch control, ultra-light carriage and fast type bar return. Also new is a special key-jam release mechanism, controlled by a key to the left of the space bar.

Write No. 55 on Inquiry Card—Page 32

Web-O-Printing, a method of addressing and marking labels, tags and cartons using a small hand stencil duplicator, is the subject of a new **four-page bulletin** available from **Weber Marking Systems, Division of Weber Addressing Machine Company, Inc., Mount Prospect, Illinois**.

Write No. 56 on Inquiry Card—Page 32



Acme Visible Records, Inc., Crozier, Virginia has a new **Activisible Record Pack**. It makes any drawer a **Visible Record File**. Just lift and it opens fully. Can hold a pack of 25 cards. When open, the cards lie flat in natural posting position. When closed, the pack is compact enough to be carried in a man's coat pocket.

Write No. 57 on Inquiry Card—Page 32



BUSINESS FORMS WITHOUT CARBONS


NCR PAPER DOES IT!... produces cleaner, clearer copies

Business forms users everywhere are discovering that NCR Paper speeds up their work. Without using carbon paper or even any carbonization, this amazing paper makes perfect copies of sales slips, invoices, premium notices, stock requisitions—any one of hundreds of applications where clean, clear copies are needed.

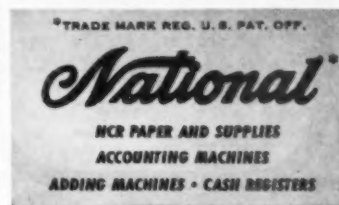
Non-smearing NCR Paper, perfected by the research laboratories of The National Cash Register Company, eliminates smudging of copies or fingers and

is easy to handle because it requires no carbon inserts. Up to five legible copies can be made with a standard typewriter, ball-point pen or pencil and eight or more with a business machine or electric typewriter.

NCR Paper is simple to use. Just put together several forms. Copies are obtained from hand written or business machine or typewriter forms. Finished copies are always neat and clean, easy to read.

Have your forms printed on NCR Paper by your present forms supplier. You'll be amazed how easily it solves the problem of producing multiple copies. You'll get better, cleaner copies in less time! Phone your present forms supplier, today, for further information. 

ANOTHER PRODUCT OF
THE NATIONAL CASH REGISTER COMPANY, Dayton 9, Ohio
989 OFFICES IN 94 COUNTRIES



save 20%

on
mailing time

with
**TENSION
ENVELOPES**

**Touch'n Seal
envelopes**

Free "idea kit" shows you how!

Why lose labor time in the mailing room or in the office with conventional gummed flap envelopes?

You seal without moisture with Tension Touch'n Seal envelopes. They eliminate at least two complete steps in mailing room operations. Secretaries love them and efficiency experts praise them. Touch'n Seal works equally well for correspondence or mailing bulky contents. Absolutely no "popped" flaps!

And they actually pay for themselves by reducing mail-handling time up to 20 per cent or more. Write for FREE samples.

FREE

Tension Envelope Corp.
817 East 19th Street
Kansas City 8, Missouri

Please send me your FREE Envelope Idea Kit for insurance executives.

Name.....Title.....

Firm Name.....

Address.....

City.....Zone.....State.....

338

For More Information Write No. 234
on Inquiry Card—Page 32

Office Equipment

How tape recorders can save time and money in more than 70 business and industrial applications is explained in a new 41 page booklet offered by **Minnesota Mining and Manufacturing Company, St. Paul, Minn.** Called, "The Tape Recorder in Business and Industry," the pocket size manual tells how tape recorders are used in management communications, methods and procedures in factories, and in many other departments.

Write No. 58 on Inquiry Card—Page 32



Bentson Mfg. Co. of Aurora, Illinois, maker of steel office furniture, has brought out a new desk which features a built in, **fire-proof safe**. Called the Guardex desk, the safe can be installed in either side of a standard, double pedestal, secretarial desk. The safe is completely concealed by a single door and is controlled by a Yale lock with 10,000 possible combinations. The safe slides out of its pedestal on ball bearing, cradle suspension.

Write No. 59 on Inquiry Card—Page 32

"Office Copy Machines and How to Choose the One to Suit Your Needs" is the title of a new information bulletin published by **Peerless Photo Products, Inc., Shoreham, Long Island**. Describing the main features of the four different types of office photocopy processes which are in general use today, the bulletin points out the relative merits of each with respect to print quality, economy of operation and the permanence of copies.

Write No. 60, on Inquiry Card—Page 32



**Here's
peace**

**FOR A
WAR OF
NERVES**



If your files are a "mess"—papers jumbled in bulging, dog-eared folders, records lost or misfiled—if you're losing minutes and dollars, wearing down your nerves every time you want to file or find a letter, order, invoice, *Here's Peace!* ACCO-filing will stop this war of nerves—keep all your papers neatly, correctly filed, safely bound, where you want them *when* you want them.

ACCOPRESS Binders and ACCOBIND Folders solve your file problems—are available in most any size, any capacity, with or without tabs—and at transfer time you just slip the contents, *still bound*, from Accobind Folders, saving the covers for year after year of more filing.

Ask your stationer about Acco-binding.

ACCO PRODUCTS

A Division of NATSER Corporation

OGDENSBURG, NEW YORK

In Canada: Acco Canadian Co., Ltd., Toronto

For More Information Write No. 235
on Inquiry Card—Page 32

"For Building Business..."

The Elbe File & Binder Co., Inc., Fall River, Mass., published an all-new, 116 page, loose-leaf & sales presentation catalog. It lists over 1500 stock items and hundreds of made-to-order binders. The features: 1. An exclusive loose-leaf planning section. 2. Helpful idea sections for increasing office and sales efficiency. 3. Special sections dealing with sales tools, custom-made products, advertising specialties, business gifts and visual aids; 4. Dozens of all-new stock lines and advanced styles.



For More Information Write No. 236
on Inquiry Card—Page 32

PURCHASING



The Reynolds Printasign Company of Pacoima, Calif. recently announced its first automatic sign and display typewriter, with type sizes ranging up to two inches. The typewriter is designed to print display cards, flip charts, name plates and other signs used in industrial plants. Operating on the typewriter principle, it contains type in several different sizes and faces. It spaces automatically after each letter is printed.

Write No. 61 on Inquiry Card—Page 32

A comprehensive collection of leaflets and folders describing office equipment and systems exhibited at the 1957 National Business Show is now ready. The 1957 edition of the catalog provides specific data on most of the 500 product classifications displayed in the exhibits. Copies of the catalog can be obtained as long as the supply lasts.

Write No. 62 on Inquiry Card—Page 32



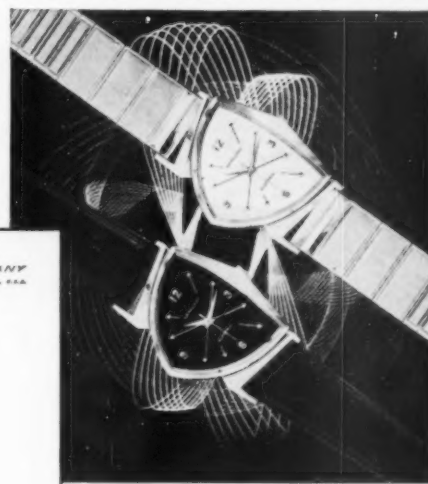
The Printmaster 1000, a high speed and high volume white-print machine for the reproduction of drawings and a wide variety of other forms, has been introduced by the Ozalid Division, General Aniline and Film Corporation, Johnson City, New York. The new machine, which accommodates materials up to 54 inches in width by any length, prints and develops at speeds up to 100 feet per minute.

Write No. 63 on Inquiry Card—Page 32

APRIL 14, 1958

Prominent Users of Strathmore Letterhead Papers: No. 133 of a Series

A miniature energy cell operates the new Hamilton Electric Watch with precise, constant accuracy, without ever winding.



HAMILTON WATCH COMPANY
LITCHFIELD, CONNECTICUT, U.S.A.

time for Quality!

Business executives will tell you that the time for quality is *always*...and in every detail. They choose letterheads, for instance, very carefully—knowing their correspondence is widely observed. They are aware it would be shortsighted to settle for second best when *first quality* papers—Strathmore letterhead papers—are available. For this reason, the Hamilton Watch Company selected Strathmore for executive stationery that properly reflects corporate character. Ask your supplier to show you how a Strathmore paper will help express the quality of your company in your letterhead.

Hamilton Watch Company began manufacturing watches in 1892, principally for railroads. Since that time, Hamilton's production has expanded to include quality watches of all types, all known for their "railroad accuracy." Just this past year, Hamilton pioneered in an exciting new development in watchmaking—the world's first Electric Watch.

STRATHMORE LETTERHEAD PAPERS: STRATHMORE PARCHMENT, STRATHMORE SCRIPT, THISTLEMARK BOND, ALEXANDRA BRILLIANT, BAY PATH BOND, STRATHMORE WRITING, STRATHMORE BOND, ENVELOPES TO MATCH CONVERTED BY OLD COLONY ENVELOPE CO
STRATHMORE THIN PAPERS: STRATHMORE PARCHMENT UNION SKIN, STRATHMORE BOND UNION SKIN, STRATHMORE BOND AIR MAIL, STRATHMORE BOND TRANSMASTER, REPLICA.



STRATHMORE

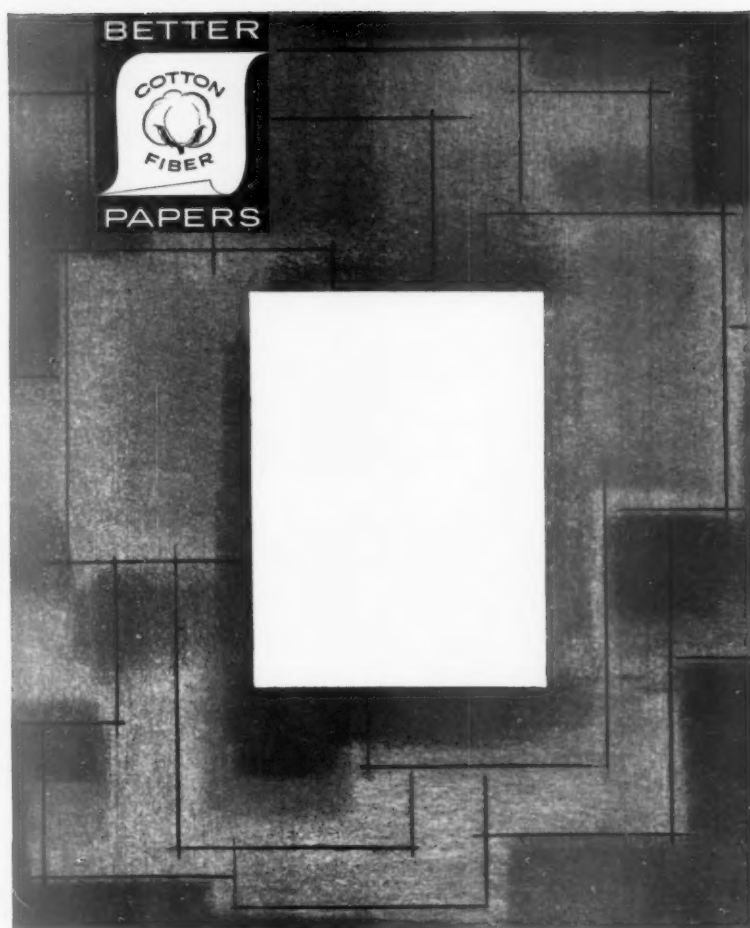
MAKERS OF FINE PAPERS

STRATHMORE PAPER COMPANY, WEST SPRINGFIELD, MASSACHUSETTS

BETTER PAPERS ARE MADE WITH COTTON FIBER



For More Information Write No. 237 on Inquiry Card—Page 32



QUALITY THAT STANDS OUT At A Cost You Hardly Notice WESTON Cotton Fiber BOND

A distinctive letterhead is an asset in any business. In WESTON BOND, you get conspicuous quality at a price that adds little or nothing to your correspondence costs.

Made better with cotton fiber, WESTON BOND has extra character and impressiveness, beauty of finish, sparkling brightness and rugged durability. Your printer has it in white, colors, white opaque, litho finish and envelopes to match. Ask him to use it on your next letterhead . . . or write for a sample book and make your own comparison. Address dept. PN.



BYRON WESTON COMPANY
Makers of Papers for Business Records Since 1863
DALTON, MASSACHUSETTS

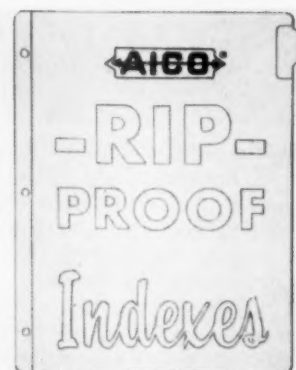
WESTON BOND

Cotton Fiber Quality Letterhead Paper

COTTON FIBER BONDS • LEDGERS • MACHINE POSTING LEDGERS • INDEX BRISTOLS

For More Information Write No. 238 on Inquiry Card—Page 32

Office Equipment



A line of Aico **indexes and division sheets** with the binding edges reinforced with Mylar Polyester film was introduced by **G. J. Aigner Company of Chicago**. This new feature assures longer life and prevents the punched binder holes from wearing, tearing, ripping and pulling through.

Write No. 64 on Inquiry Card—Page 32

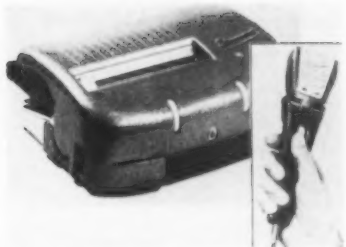
Jas. H. Matthews & Company of Pittsburgh, Pa. has released a new **booklet** describing the **five basic offset printing units**. It describes the function and specifications for a wide range of industrial printing applications; for steel, plastic, aluminum and other surfaces.

Write No. 65 on Inquiry Card—Page 32



Tab Products Company, San Francisco, Calif. has added a new line of **card box files** to its data processing auxiliary equipment. These files store 2000 card boxes of machine accounting cards inside the original container. They provide a neat, orderly method for using these containers for storage of inactive or semi-active punched cards as well as new card stock.

Write No. 66 on Inquiry Card—Page 32



A combination dictating-transcribing machine suitable for large institutions, as well as individual businessmen has been announced by the **Stenocord Division of Pacific Instruments Corporation, Los Angeles, Calif.** The machine weighs nine pounds and the microphone operates like an "electronic brain", enabling the user to backspace as often as he likes, pinpoint back-dictation and make corrections verbally without noting corrections in writing. The magnetic belt is reusable thousands of times.

Write No. 67 on Inquiry Card—Page 32

A new aid to help management investigate the electronic computer, its capabilities, operation and applications has been published by **Remington Rand Univac Division of Sperry Rand Corporation.** The publication is a 196-page manual titled, "A Study for Management—The Univac II Data Automation System."

Write No. 68 on Inquiry Card—Page 32

An illustrative brochure, "A New Standard for Space Utilization" can be secured from **Mobile Storage Division of Dolin Metal Products, Brooklyn, New York.** The brochure describes a system of eliminating aisle space through a conversion which permits seven, eight or ten rows of storage equipment to one aisle and is said to increase the storage capacity by 30 to 70 per cent.

Write No. 69 on Inquiry Card—Page 32

Victor Adding Machine Company, Chicago has recently published an illustrated **office machine catalog** to provide information for intelligent purchasing, performance data and complete specifications in adding machines and printing calculators. The book is called, "Your Keys to Better Business."

Write No. 70 on Inquiry Card—Page 32



making offices better for business since 1888

Art Metal

**makes quality the best buy
for the whole office**

Art Metal Business Furniture is for those who prefer to save their company thousands of dollars annually, *for the life of the equipment*, rather than one-time purchase-price dollars.

Art Metal's unsurpassed completeness of line with full adaptability to particular job needs produces constant dividends...convenience, comfort, efficiency...plus savings in office floor space as high as 33 per cent.

All this makes a better buy of the finest in smart design and top-quality construction long associated with the name

Art Metal. Your local representative can give you valuable planning help if desired. He's listed in the Yellow pages—or write **Art Metal Construction Company, Jamestown 8, New York.**



Vertical Filing for Engineering Records



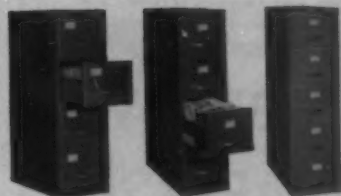
General Office Desks and Chairs



Everything for the Executive Office



Modulars with Movable Partitions



Filing Equipment and Systems... Insulated Files... Speed-Files, Multi-Files... Open File Shelving

*** National sales and service in more than 800 cities.**

© A. M. C. Co., 1958

For More Information Write No. 239 on Inquiry Card—Page 32



Time Will Tell...

The old gentleman knows a good permanent record paper when he sees one. For the surest test of the value of such paper is TIME itself. Then, of course, comes the ability to take repeated erasures, rewriting and hard handling.

It takes the finest of new white cotton fibers combined with skillful unhurried techniques in converting them into paper to produce those qualities, inherent in

L. L. BROWN'S LINEN LEDGER

EXTRA #1

100% new white cotton fiber

This superior record paper has won its reputation on all counts in actual usage over the years in county and city offices where records must be enduring.

L. L. BROWN

LEDGER & RECORD



PAPERS

Since 1849

Adams, Massachusetts

For More Information Write No. 241
on Inquiry Card—Page 32

Office Equipment



The Gray Manufacturing Company of Hartford, Conn. recently introduced a new, small, fully transistorized **recording instrument**. Known as the Gray Audio-graph Key-Noter it is compatible with all other Gray equipment and uses a standard 20 minute disc. The shock-resistant construction, size and weight make it ideal for travel as well as office use. The new model has two push buttons and one is marked "Talk" and the other is marked "Listen." A simple movement of the scanning dial makes it possible to listen to any part of the recording.

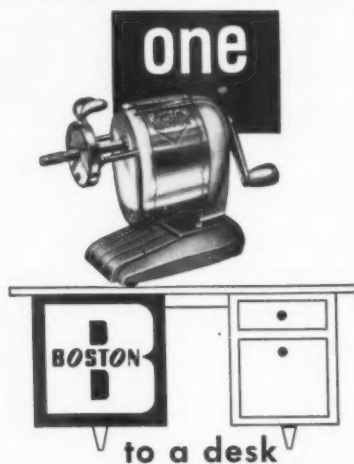
Write No. 71 on Inquiry Card—Page 32

A four-color, six-page **brochure** is being offered by the **E. F. Hauserman Co., Cleveland** describing the company's new aluminum movable interior wall system. Wall panels and posts are available in natural aluminum finish, or they can be furnished in anodized or baked enamel lifetime finishes in any combination of desired colors.

Write No. 72 on Inquiry Card—Page 32



A new **waste receptacle**, featuring an exclusive top with full-width independently operating flaps for fast and safe waste disposal, has been introduced by the



to a desk
speeds efficiency—ups morale
BOSTON CHAMPION

PORTABLE PENCIL SHARPENER

now in decorative green, blue, sand-tone, and gray colors

- sharpen pencils at desk—fast—no more sharpener searches
- saves much more in time and efficiency than actual cost in brief period
- a low-cost quality item that helps desk workers feel more important

Send for free comprehensive report on sharpeners, Booklet T.

C. HOWARD
HUNT

PEN CO., Camden 1, N.J.

For More Information Write No. 240
on Inquiry Card—Page 32

BOSTON
PENCIL SHARPENERS

Superior Metalware Division, John Wood Company, St. Paul, Minnesota. An outstanding feature of the receptacle is its rain-proof top. The hinged top folds back for easy emptying and is interchangeable with existing tops.

Write No. 73 on Inquiry Card—Page 32



Marketing of a combined camera and plate-processing unit for offset duplicator departments and plants was announced recently by **Photostat Corporation, Rochester, New York.** The new unit, called the Platemaster produces up to 200 offset plates daily, utilizing negatives it makes from rolls of photographic paper. Plate processing and photographic operations may be carried on simultaneously. No darkroom is required. Plates cleaning is unnecessary at any point. Previously-screened halftones can be reproduced successfully.

Write No. 74 on Inquiry Card—Page 32

Over 40,000 business executives—top management, purchasing officials and operating management are expected to attend the **National Office Machinery and Equipment Exposition in Chicago, May 26-28.**

One hundred and twenty-seven manufacturers and suppliers of office needs will display their products on three floors of the Conrad Hilton Hotel, including the Exposition Hall, from noon until 10 P.M. Sponsored by the National Office Management Association, the exposition is open to all business executives.

**FOR MORE INFORMATION
ON PRODUCTS IN
THIS ISSUE
USE INQUIRY CARD
PAGE 32**

MAKES CLEAN BREAK WITH PAST NU-KOTE[®]—the most remarkable newcomer in the history of typewriter carbon . . .

Turns out copies that can't smudge or smear! Outlasts ordinary carbon 3 to 1, sheet for sheet. That's NU-KOTE, the first really different typewriter carbon.

What else is new? NU-KOTE's plastic base. Its unique printing press principle of making impressions—all of them clear and sharp from first to last. One weight, one finish, NU-KOTE can be used on any typewriter for just about every copy job imaginable, reducing costly inventory.

SEND FOR FREE NU-KOTE SAMPLE: Write Dealer Sales Dept., Burroughs Division, Burroughs Corporation, Detroit 32, Michigan.

For More Information Write No. 242 on Inquiry Card—Page 32

Association News

1958 N.A.P.A. Convention Tentative Program

The tentative program for the 1958 N.A.P.A. Convention and Inform-A-Show, to be held at the Conrad Hilton, Chicago, has been announced by the general program chairman, Harold A. Berry.

Monday Morning, May 12. General Convention Session. Individual, Association and Company Relationships. Will include the President's Message by Robert E. Shillady, president, National Association of Purchasing Agents; and these talks: "One P.A. Looks at our Problems and Opportunities" by George A. Renard, associate editor for purchasing economics, *Journal of Commerce*; "Purchasing's Place in America's Future" by John A. Hill, president, Air Reduction Co., Inc.; "What Does the Harbridge House Report Tell Us?" by George W. Aljian, chairman, N.A.P.A. organization planning committee, and director of purchasing and packaging, California & Hawaiian Sugar Refining Corp.

Monday Afternoon, May 12. General Convention Session. Will include these talks: "Outlook for Coal" by B. R. Gebhart, vice president-sales, Freeman Coal Mining Corp.; "Outlook for Fuel Oil" by Frank C. Colgrove, executive vice president, Allied Oil Co.; "The Future of Atomic Energy" by Walker L. Cisler, Detroit Edison Co.; "Outlook for Nonferrous Metals" by Dr. Joseph Zimmerman, editor-in-chief, *Daily Metal Reporter*.

Tuesday Morning, May 13. General Convention Session. Philosophy, Policy and Procedures. Will include these talks: "Job of the Purchasing Manager" by David S. Gibson, general manager of purchases, Worthington Corp.; "Job of the Buyer" by Gailon C. Fordyce, assistant director of purchases, American Cyanamid Co.;

"Job of the Expediter" by Donald T. Keliher, director of purchases, United States Metals Refining Co.; "The Place of Transportation in the Purchasing Picture" by Marshall M. Parkhurst, traffic manager, International Harvester Co.; "Negotiated Purchasing" by Louis J. De Rose, De Rose & Associates.; "Is Data Processing in Your Future?" by Frank C. Walters, chairman of project committee on data processing, national committee on education, and division purchasing agent, Esso Standard Oil Co.

Tuesday Afternoon, May 13. 1:30 P.M., National Committee and Group Sessions. 2:00 P.M., Standardization Workshop. 3:00 P.M., Governmental, Educational and Institutional Buyer's Group.

Tuesday Evening, May 13. 7:00 P.M., Annual Banquet. Will include address by E. F. Andrews, past president, National Association of Purchasing Agents; Pitman-Moore Co.

Wednesday Morning, May 14. General Convention Session. Economics, Business Analysis and Forecast. Will include these talks: "How to Interpret Forecasts" by Robinson Newcomb, Robinson Newcomb Associates. "Economic Problems" by panel of economists: moderator, H. E. Luedicke, editor and economist, *Journal of Commerce*; Martin R. Gainsburgh, chief economist and director, Division of Business Economics, National Industrial Conference Board; John K. Langum, economist, Business Economics; C. F. Ogden, chairman, N.A.P.A. Business Survey Committee, and vice president of the Detroit Edison Co.; Dr. Leo Wolman, professor of economics, Columbia University.

Wednesday Afternoon, May 14. National Committee Meetings.



John A. Hill, president, Air Reduction Co., Inc., will speak on "Purchasing's Place in America's Future."



David S. Gibson, general manager of purchases, Worthington Corp., will outline the "Job of the Purchasing Manager."



Gailon C. Fordyce, assistant director of purchases, American Cyanamid Co., will discuss the "Job of the Buyer."

Covering the country from a central point

**"UNITED RESERVED AIR FREIGHT
GIVES WARD'S CUSTOMERS
FAST FASHION SERVICE"**



—T. C. HOPE
General Traffic Manager
Montgomery Ward, Chicago

"Our distribution center for mail order fashions is in Chicago. Yet we give overnight delivery in key cities coast to coast, thanks to the speed of United Air Freight. But speed alone isn't the whole story. The personal attention we get from United is equally important to us. Their dependability, too. United delivers on time."

For service, information, or free Air Freight booklet, call the nearest United Air Lines Representative or write Cargo Sales Division, United Air Lines, 36 South Wabash Avenue, Chicago 3, Illinois



"THIS CUSTOMER has made her selection in our Oakland, Calif., catalog department. Her order is promptly relayed to us in Chicago. We have regular reserved air freight space with United—so it's just a matter of making the plane."



"JERRY MILLS, United's account executive, sees that the individual shipment is received and loaded with hundreds of others aboard United's fast DC-6A. The dress is in Oakland the next day. Just like having a flying warehouse!"

UNITED AIR FREIGHT RATES ARE LOW

per 100 pounds*

CHICAGO to PHILADELPHIA	\$ 7.70
SALT LAKE CITY to DETROIT	16.20
DENVER to NEW YORK	17.70
SAN FRANCISCO to SOUTH BEND	21.05
AKRON to SEATTLE	22.20

*These are the rates for many commodities. They are often lower for larger shipments. Rates shown are for information only, are subject to change, and do not include the 3% federal tax on domestic shipments.

LOW RATES are only part of the story of Air Freight's advantage. Even more saving is reflected in reduced inventory, economical packaging and insurance. United speed and 80-market service offer you distinct competitive advantages.

IT COSTS NO MORE FOR EXTRA DEPENDABILITY—ON UNITED, THE RADAR LINE

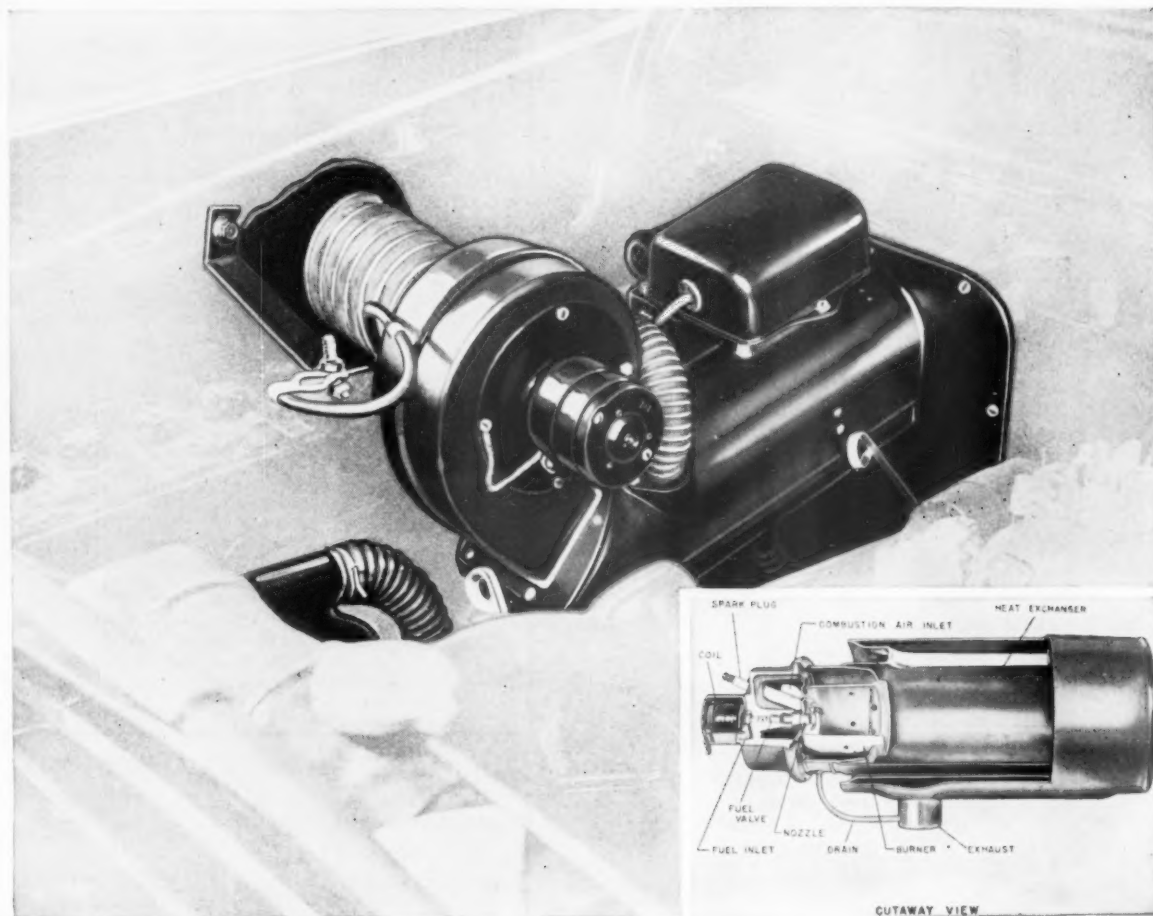
For More Information Write No. 243 on Inquiry Card—Page 32

APRIL 14, 1958

127

Problem-Solving Products from Republic

RESIST HEAT AND CORROSION, INCREASE STRENGTH/WEIGHT RATIOS



CORROSION AND HEAT PROBLEMS were solved in this car heater with the help of Republic ENDURO® Stainless Steel. The gasoline burning heater is manufactured by South Wind Division of Stewart-Warner Corporation, Indianapolis, Indiana.

The unit is equipped with its own spark plug and fuel pump which ties into the car's gas line just ahead of the regular fuel pump. The spark plug ignites the gasoline which burns with a continuous flame for regulated periods of time. Thermostatically controlled and rated at 30,000 BTU's, the heater will deliver warm air in five seconds and 180° temperatures in 30 seconds.

ENDURO Stainless Steel, Type 430, was selected for the combustion chamber and surrounding housing

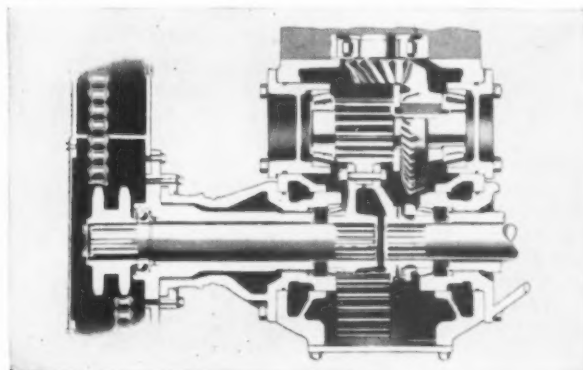
because of its low thermal expansion and resistance to corrosion and oxidation at high temperatures (up to 1400°F).

Still another advantage of ENDURO, Type 430, is that it can be readily formed into desired shapes by rolling, bending, pressing, drawing, etc. Its properly prepared surface shows good resistance to atmospheric attack and tarnishing which accounts for its widespread use as molding and decorative trim sections.

Type 430 is but one of more than 35 standard types of stainless steel produced by Republic. Our metallurgists and engineers are always available to work with you in selection, application and processing. Just mail the coupon. There is no obligation.



FOR MAXIMUM SUPPORT. National Seating Company uses Republic ELECTRUNITE® Mechanical Tubing in their "cradle recline" passenger seats. The seat is mounted on 1" O.D. square ELECTRUNITE, bent to a 45° angle for styling. High ductility and superior strength-to-weight ratio of ELECTRUNITE make this operation possible. Rear legs are of 1/2" x 14-gage round tubing. Besides structural and ornamental advantages, steel tubing eliminates the danger of accidents caused by sharp-edged structural members. Send coupon for complete details on ELECTRUNITE.



OUTSTANDING CORROSION-RESISTANCE even after deep-drawing is provided by Republic Continuous Galvanized Steel. Under the toughest manufacturing condi-

tions the zinc coating will not crack, flake or peel in any forming operation permitted by the base metal. That's why Mackenzie Muffler Company, Inc. uses it in fabricating mufflers for cars, trucks and tractors. Republic Continuous Galvanized cuts manufacturing costs, too. It eliminates costly hot dip operations. Permits continuous uninterrupted production. Available in a wide range of sizes, gages and grades in sheets or coils. Mail the coupon for complete facts.

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Send more information on:

☐ ENDURO Stainless Steel

☐ ELECTRUNITE Mechanical Tubing

☐ Continuous Galvanized Steel ☐ Alloy Steels

Name _____ Title _____

Company _____

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For More Information Write No. 244 on Inquiry Card—Page 32

PREMIUM GEARING

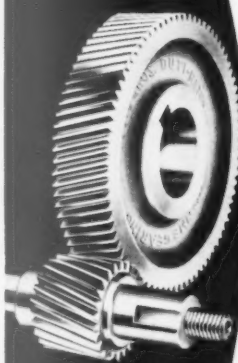
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1638 Duti-Rated COMBINATIONS

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Horsepower Ratings....1 to 200*
Center Distances.....2" to 12"*



Check with Foote Bros. *before* you finalize that design. The chances are you'll find exactly what you need among the 1638 stock combinations of Duti-Rated Helical Gears.

When you buy Duti-Rated Gearing, you'll get more than best for your money... you'll get the benefit of thousands of engineering and development hours... and the unquestioned advantages of precision tooling and manufacturing methods. You'll get performance proven in countless Foote Bros. Line-O-Power and special drives, and Foote Bros. —Louis Allis Gearmotors. This is high hardness, accurate, balanced design gearing that will give you more load capacity and wear life per dollar.

*Larger sizes made to order from standard tooling.

Write for DUTI-RATED catalog: Engineering Manual DR No. 2.

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Horsepower Ratings....1 to 100†
Center Distances.....2" to 12"†



Need worm gear and worm sets? There is economy and convenience in choosing them from the many Foote Bros. worm gear combinations available from stock. This is the same gearing used in famous Foote Bros. HYGRADE Enclosed Worm Gear Drives... engineered, premium quality gearing at production-run prices.

Engineering Manual SW No. 1 has complete details. Write for your copy.

† Tooling available for larger worm gear sets, engineered, but not stocked, to 200 HP and 18" centers. Prompt deliveries.

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Let us help you select standard helical or worm gearing to meet your special requirements, or, let us design and build your complete unit. Place your gear problems in the hands of experienced power transmission and gear engineers. Your inquiry is invited, and there's no obligation.



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Better Power Transmission Through Better Gears

FOOTE BROS. GEAR AND MACHINE CORPORATION
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Association News

Kennedy Addresses Youngstown P.A.'s Sales Group



Andy Kennedy addressed a recent joint meeting of Youngstown District Purchasing Agents Association and the Mahoning Valley Sales Managers Association. Sponsored by the purchasing agents, the meeting was held at the Tippecanoe Country Club.

Mr. Kennedy recommended that the salesman try to put himself in the buyer's shoes and adopt his point of view. "The buyer's company is going through just about the same problem that the salesman's company is going through," said Kennedy. "Every buyer is expected to do a tough buying job and the chances are he is expected to do it with less people and more work. Never before has his ability to improve the product cost in his company been more strategic, nor more valuable to his management. So what's the buyer looking for under these circumstances? He's looking for ideas—all kinds of ideas: how to use cheaper material to do the same job; how to use the same kind of material better; what to substitute for lower costs; new developments that are going to give his company a better product; design ideas—original, unoriginal or pirated."

Mr. Kennedy concluded that the seller who makes a real cost contribution to the buyer by giving him the ideas he's looking for will get a share of his business.

For More Information Write No. 246 on Inquiry Card—Page 32→

PURCHASING



New! A unique system for avoiding production delays

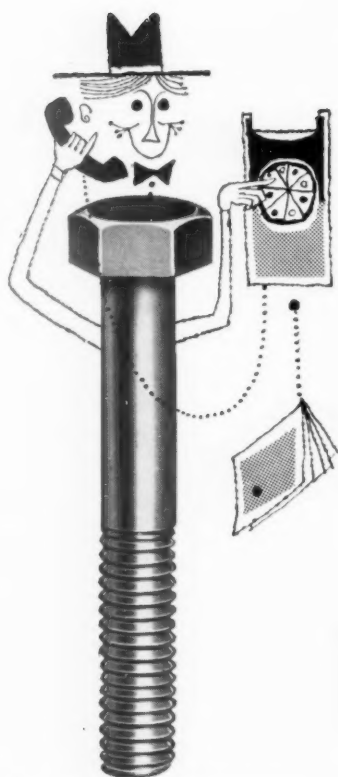
Just recently, Clark Equipment Company inaugurated a communications system among dealers, its parts supply division, and its four plants, using electronic data processing and transmission equipment. Thus, when you need a specific truck or part that is not available locally, you obtain a fast answer through Clark headquarters and the entire dealer network.

All requests are put through data processing equipment for immediate action. Headquarters

communicates with dealers individually, regionally, or nationally for information that will give you an answer in minutes. The system provides service unparalleled in the materials handling industry.

For details of this modern, new communications network and how it will affect your operations, simply write: Network, Clark Equipment Co., Battle Creek, Michigan.

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Gentlemen: Please send complete specification data and samples of Alcoa Aluminum Fasteners.

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Company _____
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Association News

Central Iowa Hears V. A. Talk

The Purchasing Agents Association of Central Iowa heard C. D. Francisco, midwest editor of Purchasing magazine, discuss the importance of value analysis. Mr. Francisco is well qualified to speak on the subject, having worked in General Electric's value analysis section for several years.

The following people were nominated at the meeting for association membership: John Stone, Solar Aircraft Co.; and Edward Beale, Marshalltown Container Co.



C. D. Francisco, midwest editor of Purchasing magazine, speaking on value analysis.



Warren Gerstenkorn, Eagle Iron Works, leads discussion on association business matters.

A later meeting of the association featured a tour of the John Deere Waterloo Tractor Works. Five minute "Know Your Company" talks were given by Donald H. Howing, Ahrens Mfg. Co.; and Marlin A. Cook, Titus Mfg. Co.

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PURCHASING

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by using Timken® bearings
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BY standardizing on a few Timken® bearing sizes that we make by revolutionary new cost-cutting methods, the automobile industry has kept its bearing costs at rock-bottom levels. It's methods like these that enable us to cut our manufacturing costs, and pass the savings on to you.

The picture at right shows a big reason why these savings are possible. It's the inside of our revolutionary new bearing plant at Bucyrus, Ohio, that can turn out over 30 million bearings a year without a hand touching them. These missile-age manufacturing techniques result in higher volume, lower manufacturing costs and bigger savings for you.

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Association News

Chicago P.A.'s Annual Product Show

The Purchasing Agents Association of Chicago sponsored its annual Products Show at the Morrison Hotel in February. Thousands of purchasing agents, engineers, designers, and management executives, as well as superintendents, foremen, and shop men attended. New ideas, new products, and new methods were demonstrated by almost 120 exhibitors.

Dr. Tennyson Guyer, known to his audiences as the ambassador of good will, was the guest speaker at the banquet. L. M. Ansley, plant manager of Inland Steel Container's Cleveland operations and formerly director of purchases for the company, was the toast-master. While in Chicago, Len Ansley was very active in purchasing circles and in the Chicago Association, serving as president of the Chicago chapter and chairman of the district three educational committee for N.A.P.A.

Traffic Manager Speaks to Central Illinois P.A.'s

The Purchasing Agents Association of Central Illinois had as their speaker for the evening Mr. Russell Lentz, traffic Manager, Sangamo Electric Co., Springfield, Illinois. Mr. Lentz thoroughly discussed the various modes of transportation, merits of each, such as speed and dependability of service, and he made a cost comparison. He stressed the importance of transportation to the purchasing agent and suggested several methods of reducing transportation costs.

An announcement was made at the meeting of two new committee chairman: education committee, William L. Johnson, director of purchasing, Food Machinery & Chemical Corp., Canning Machinery Division, Hoopeston, Illinois; and standardization committee, D. J. Bowden, purchasing agent, Electronic-Timers Company, Division of P. R. Mallory & Co., Inc., Pana, Illinois.

PURCHASING

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...One Carrier Responsibility ALL THE WAY
with NON-STOP, 2-MAN SLEEPER CABS!

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Single Carrier...

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ONE STEP ACROSS THE NATION

D.C. DENVER CHICAGO TRUCKING CO., INC.

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A Mayflower Move Is a Good Move!



Any man you move for your company is an *important* man in your organization. If he weren't you wouldn't be transferring him. Whether he's a production manager, engineer, salesman, or top executive, you'll find he has confidence in Mayflower. Here, for instance, is a note we received from a recent customer whom we moved from Wallace, Idaho to Richmond, California:

"All the service was excellent. I would heartily recommend Mayflower, and I shall do it if the opportunity presents."

It's a mighty good move to call Mayflower for your personnel transfers. Just phone your nearby Mayflower agent for America's Finest Long-Distance Moving Service.

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AMERICA'S FINEST LONG-DISTANCE MOVING SERVICE

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Association News

Columbus P.A.'s Hear Purchasing Editor

Doug Francisco, midwest editor for PURCHASING magazine, spoke to the Columbus Association of Purchasing Agents on value analysis. The title of his talk was "Imagineering." Mr. Francisco, formerly with the General Electric Company's value analysis section in Schenectady, New York, is one of the few recognized authorities on the subject.

At a prior meeting of the association, held at the Grandview Inn, Wayne Wilson, welcome and welfare committee, introduced two new members: Thomas O'Connor, North American Aviation, and Donald Stone, Western Electric Company.

Lyle Treadway, sixth district vice president, reported on the national executive committee meeting at Memphis, Tennessee. He mentioned the financial status of the national association, and spoke about the development program on education.

Denver P.A.'s Have Standardization Meeting

The Purchasing Agents Association of Denver made the subject of Standardization the theme of a recent meeting held at the Terrace Room, Brown Palace Hotel. Kenneth A. Cruise, Bendix Aviation Corp., and district three chairman for standardization, discussed some aspects of the work of his committee. The fourteenth in a series of standardization bulletins was passed out by the committee.

The following new members were introduced at the meeting: Homer N. Todd, Colorado Central Power Co.; James A. Kyffin, C. A. Norgren Co.; H. M. Carlson, Hendrie & Bolthoff Co.; William A. Ellis, Armco Drainage & Metal Prod. Inc.; Malcolm H. Sublett, Franklin Supply Co.; Oliver M. Calabrese, Longero Boiler & Sheet Iron Works; and David M. Sage, Cyclone Filter Corp., Longmont.

WATCH FOR THE VALUE ANALYSIS IN ACTION EDITION OF PURCHASING MAGAZINE

May 12, 1958

This edition will contain important information on . . .

HOW Value Analysis is applied in a small purchasing department.
HOW Value Analysis training can be made to yield spectacular results.

HOW Value Analysis promotes teamwork between purchasing and engineering.

HOW Value Analysis becomes an integral part of the Materials Management Program.

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HOW a Value Analysis committee can be organized to get results.

Also. . . HOW Value Analysis works in the process industries.

AND. . . for the first time. . . there will be important information on. . .

PRE-PRODUCTION **P**URCHASE **A**NALYSIS . . . what it is . . . how it works . . . how to use it in your own department.

IN ADDITION . . .

this special edition will include about 500 actual case histories of audited savings. . . classified for easy reference into eight complete sections as follows:

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Association News

Kodak Vice President Addresses Rochester P.A.'s

A recent meeting of the Purchasing Agents Association of Rochester set a high standard in attendance, speaker interest, and subject matter. More than one hundred members and guests of the association listened to Edward Peck Curtis, vice president and director of Eastman Kodak Company, discuss, in a most enlightening manner, his recent work in Washington as a special assistant to President Eisenhower for Aviation Facilities Planning. Mr. Curtis enumerated some facts that were part of a report he made to the President. He indicated what he hoped the report would accomplish.

Mr. Curtis, a major general in the Air Force, who spent 16 months on leave of absence from Kodak in 1956 and 1957, and became as he expressed it, "a bureaucrat in Washington," was



Edward Peck Curtis, vice president and director of Eastman Kodak Company, spoke to the members of the Rochester Association. His subject was a plan he submitted to President Eisenhower to make the airways safe for both civilian and military use.

asked by President Eisenhower to submit a plan to make the airways safe for both civilian and military use.

Both a short and long range program were proposed in his plan. The short range program, which was passed by the last Congress, called for the setting up

of an Airways Modernization Board of three members: one from the Defense Department, another from the Commerce Department, and the third to be appointed by the President. This board has already accomplished much good work in making the airways safer by controlling their use.

The long range plan calls for a Federal Aviation Agency to carry out recommendations looking forward 20 years.

After Mr. Curtis' talk, President Stiffler of the Rochester Association introduced the occupants of the head table and a few were called on for short remarks. Bob Copeland, as chairman of the National Convention committee, urged all to attend the meeting in May. Warren Baron boosted the purchasing workshop-seminar to be held in February and March. Jim Conklin presented immediate past president Galen with a bound copy of the Genesee Valley Buyer for 1956-57. Jerry Doyle, director of purchases for Kodak Park, introduced his associate, Mr. Curtis, and did a good job in outlining the



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Real comfort in an acid-resistant natural latex glove! This Wil-Gard has a soft, cotton fiber lining that reduces hand perspiration . . . permits fast, easy on-and-off . . . yet provides maximum flexibility and sensitivity. Curved fingers prevent binding . . . turn-down cuffs trap running liquids . . . thousands of tiny gripping surfaces provide a surer, safer grip. Write for specifications.



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Association News

biography of the speaker. January 22nd was President Stiffler's birthday, and just before the program began he was presented a cake with one lighted candle.

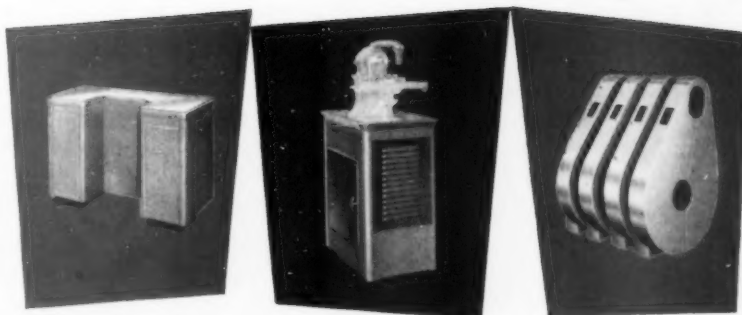
Previous to the dinner the association held a forum that consisted of a 22 minute color film called "Industrial Purchasing." A fair proportion of the members were at the forum.

Boney Gets Thomas Award

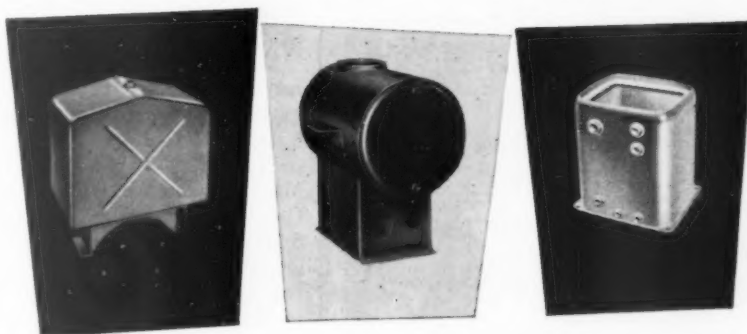
The Carolinas-Virginia Purchasing Agents Association presented its annual Thomas award to Paisley Boney, president of the association and purchasing agent of J. P. Stevens & Co., Inc. Mr. Boney has been a member of the association for ten years. During that time he served successively as chairman of the publicity, attendance, membership, program, forum panel, and education committees, and as vice-president. He has represented the association at numerous district workshops and national committee meetings on education and public relations.

Mr. Boney is the seventeenth association member to receive the Thomas award. The award is given to a member who has shown devoted service to the association and has made a definite contribution to the advancement of the purchasing profession. In addition to the heavy administrative burden Mr. Boney assumed for the association last year, he made a noteworthy contribution to the purchasing profession by presenting to the industrial development authorities of North Carolina, South Carolina and Virginia figures on how much purchasing agents of his association spent, and how much they spent within their states.

Mr. Boney is a native of North Carolina. He received his education at Woodberry Forest School and the University of North Carolina. He was in sales work before joining his present company in 1942. He was transferred to the purchasing department of this company in 1945 and is now one of its purchasing executives.



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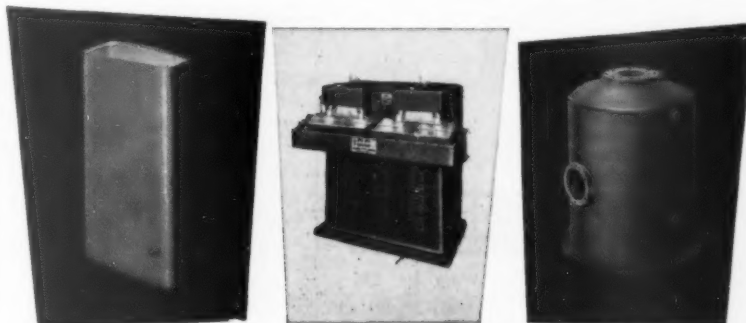
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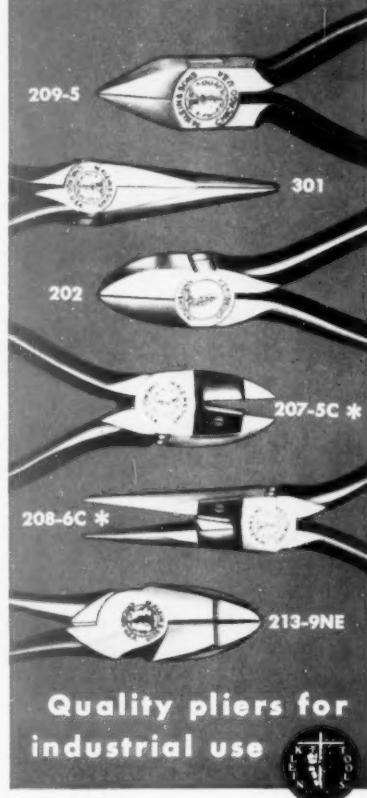


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Association News

Fifth District Vice-Pres. Nominated



Mr. Jack G. Brandamore has been nominated for the office of national vice president for the fifth district of the National Association of Purchasing Agents. Mr. Brandamore is a buyer for General Electric Company's Scranton Tube Plant, Electronic Component Division, Power Tube Department. He was instrumental in the ground work for the organization of the Purchasing Agents Association of Scranton. He was elected first president of the organization in 1954. During his term as president of the association, he was elected as a National Director and served in this capacity until 1957. He has been active on various committees and has widely supported and promoted purchasing interests in Northeastern Pennsylvania. He is a graduate of Powell School of Business and the University of Pennsylvania Wharton School.

Barnett Addresses Georgia P.A.'s

Mr. Harold C. Barnett, associate editor of PURCHASING Magazine, in an address before the Purchasing Agents Association of Georgia, described the modern purchasing department as fast becoming the nerve center of the entire business organization. Mr. Barnett, who visited many purchasing departments all over the country, spoke on the subject "How Purchasing Agents are

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They are made to provide smooth, more efficient transmission of power and are available from stock in 13 sizes with bored or solid hubs ranging from .375" to 4.000". Special bores, bores with keyways or setscrews are available upon special order.

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PURCHASING

Beating the Paper Work Problem."

"This problem, which has been brought on by the broadening of duties and an effort to keep more complete records, can best be beat by the simplification of procedure," said Barnett. "Four other methods are available to the purchasing agent: training of present personnel, mechanization of procedures, additional office equipment and addition of new personnel."

Mr. Barnett cautioned purchasing men to bear in mind the true purpose of such a program, which is to give more time for better buying. He did not advocate change merely for the sake of change, but advised an investigation to determine what changes would be beneficial and the launching of a program for making small but frequent changes. "A good beginning is the elimination of duplicate and non-essential records by making one form do the job of two," said Barnett. He observed that some purchasing agents have even eliminated the purchase order when buying local expense items.

The use of a purchasing department manual to help in the training of personnel, the use of electronic equipment and more modern office machines and equipment were suggested by the editor as means of speeding the flow of paper work. "Efficient operation saves more than dollars. It saves time—time for better buying," he concluded.

The Georgia association continued to grow as three new members were received at this meeting, which was attended by 64 members and guests.

Past Presidents Honored By Tri-City Association

Sixteen past presidents of the Tri-City Association of Purchasing Agents were honored at a meeting held at Mirandos, Milan, Illinois. Fifty two persons attended the meeting. Mr. Henry C. Kopp, president of the Chicago Association of Purchasing Agents, was a guest. The featured speaker was Thomas G. Paterson, vice

(Please turn to page 144)

APRIL 14, 1958

Now one wheel for any section of your plant

New Lamilon
NYLON-REINFORCED
ALL-PLASTIC WHEELS
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Now, for the first time, you can standardize on one wheel for all your materials handling equipment in any section of your plant. Regardless of the types of floors or floor conditions, Fairbanks new "LAMILON" Wheels will:

- Protect your floors. "LAMILON" Wheels stay smooth and concentric, will not mar or mark, because of exceptionally high impact strength and abrasion resistance.
- Show no affect from oils and greases and a very high resistance to most chemicals. "LAMILON" Wheels have a water absorption factor almost as low as high quality rubber and will not deteriorate in wet floor conditions.

- Roll easier with alloy steel roller bearings, hardened steel outer race and provision for pressure lubrication. "LAMILON" Wheels roll easier than semi-steel wheels in most instances.

- Last longer and give more dependable service than any other plastic wheel.

"LAMILON" Nylon-Reinforced All-Plastic Wheels are available in sizes 3 through 12 inches and can be furnished with thread-tight thread guards.

Fairbanks complete line of industrial caster and truck wheels includes the finest vulcanized rubber tired wheels (sizes 3"-18") on the market, solid rubber wheels (sizes 2"-6") and semi-steel wheels (sizes 2"-18").

**FAIRBANKS
"LOCKWELD"
CASTERS
WITHOUT
KING-PIN**

Easiest swiveling, longest lasting. Unique patented "LOCKWELD" construction eliminates king-pin, chief source of caster failure.

Illustration: Series "23" double ball race swivel casters, sizes 3"-8". Single ball race swivel casters, sizes 2"-6" and matching rigids available.



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For More Information Write No. 258 on Inquiry Card—Page 32

For More Information Write No. 259 on Inquiry Card—Page 32→

Correct Lubrication in Action...

Hydraulic Pump Life

Goodyear's Metal Products Division in Akron, Ohio, produces over 50% of all the tire rims made in the U.S. The smallest rim in the line weighs 7 lbs. ... the largest, 1006 lbs. Illustration shows worker chiseling rim clean after automatic welding operation.



**Complete Engineering Program
Proved Petroleum Products**

Mobil

SOCONY MOBIL OIL CO., INC., and Affiliates: MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP., MOBIL OVERSEAS OIL CO., INC.

Increased as much as 221%

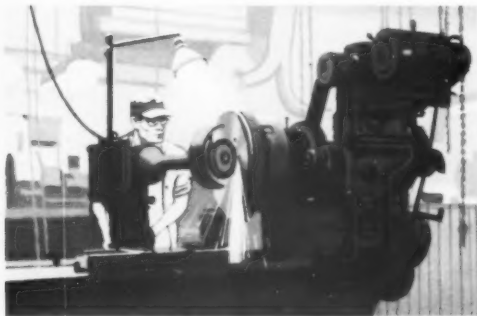
One of the ways Socony Mobil helped The Goodyear Tire and Rubber Company save over twice the cost of lubricants purchased in 1957

Nearly 100 pumps actuate the hydraulic presses and other equipment used to produce wheel rims at Goodyear's Metal Products Division. Under a Mobil program of Correct Lubrication some of these pumps have been in continuous service twice their expected life. Others with a normal plant service life of five years are still operating after 11 years. This plant has never had a pump failure due to lubrication since the Mobil program began.

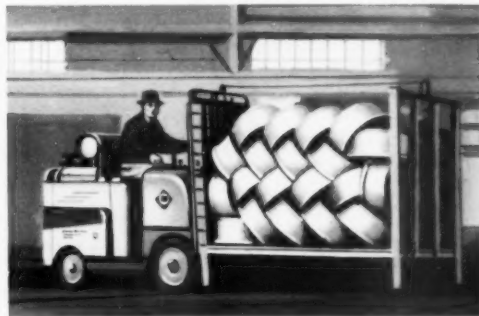
The fact that a pump failure, besides halting pro-

duction, can cost up to \$400 for labor and \$3300 for other repairs underscores this record.

Here is another example of Correct Lubrication in Action. This cost-cutting Mobil Program gives you the benefit of complete engineering service throughout your plant . . . plus the benefits of Mobil's laboratory facilities . . . and 92 years of lubrication experience. It is turning maintenance costs into profits for The Goodyear Tire and Rubber Company. Why not for you?



\$21,400 saved. Under the Mobil Program, Goodyear, to achieve maximum economy, purchases only the highest quality oils. Mobil engineers constantly check oil condition . . . advise when to reclaim. This assures minimum replacement with new oil.



\$825 a year saved. Mobil engineers helped set up maintenance pattern for Goodyear's many stock handling trucks . . . made motor oil recommendation. Result—motor overhaul period extended from every three months to every four years.



\$6,000 a year saved. High temperatures in paint drying ovens caused stoppage of conveyor system . . . cost \$500 a month in labor and materials. Mobil recommendation of special grease eliminated breakdowns.



Total 1957 savings—2.7 times purchase price of oils and greases. Through close cooperation between company personnel and Mobil engineers, maintenance costs are held to a minimum...oils deliver maximum life.

Correct Lubrication

Another reason You're Miles Ahead with Mobil!

Edgewater

WELDLESS OR WELDED

rings



ACCURATE ROLLING

SAVES MACHINING

REDUCES SCRAP LOSS

ASSURES HIGH QUALITY

Cost reduction, achieved through the use of Edgewater steel rings, is due to savings in machining time and reduced scrap loss. Both weldless and welded rings are formed to tolerances so close that a minimum of machining is required. Weldless rings are rolled from solid steel blocks by a process which produces a wide variety of cross-section shapes. Diameters are from 5 to 145 inches. Welded rings, made in diameters up to 48 inches, are formed from bars extruded or rolled to shape.



*WRITE for bulletins
describing both
weldless and welded
Edgewater Rings.*

Edgewater Steel Company

P.O. Box 478 • Pittsburgh 30, Penna.

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Association News

(Continued from page 140)

president of district 3. His talk concerned the 3 R's of purchasing: education, standardization, and public relations.

A later meeting was held in the Skyline Room of the Blackhawk Hotel, Davenport, Iowa. This was preceded by a plant visitation through the new offices and quarters of Davenport Newspapers, Inc. and a film on the making of newspapers. Charles Grayson, purchasing agent for Davenport Newspapers, Inc. and chairman of the educational committee, was in charge of the program.

Tri-City Ass'n Hears Letter Writing Talk

At a recent meeting of the Tri-City Purchasing Agents Association Norman F. Kallaus, Assistant Professor of Office Management at the State University of Iowa, gave an excellent talk on "practical ideas of letter writing."

Charles Grayson, Program Chairman of the association, introduced the speaker, saying that the subject of Professor Kallaus's talk was one that should be of great interest to the members. The rapt attention given to the Professor's discussion confirmed Mr. Grayson's remark.

That a business letter is written primarily to convey ideas was the premise upon which the professor built his basic suggestions: make the letter as simple, clear, and concise as possible.

At a later date the Tri-City Association went on a plant tour of the largest manufacturer of replacement batteries in the country. They were guests of Gould-National Batteries. At the plant the members saw displays of many battery types for industrial, railroad, and electronic applications.

The evening program, held at the Town & Country Club, was a most interesting and educational one, covering all phases of the plastics industry. It was conducted by Mr. Robert Weaver of Cadillac Plastic and Chemical Co.

Assistant Defense Secretary Addresses Pittsburgh P.A.A.

The Purchasing Agents Association of Pittsburgh listened to J. Lewis Powell, Office of Assistant Secretary of Defense (Supply and Logistics) speak on the "Collapse of Time." Mr. Powell's talk dealt with the impact of technological progress on our national economy. He gave the industrial purchasing agents present a stimulating briefing on the critical relationship of industry and defense. He said that we have to liberate our thinking from the "T-model technology" of our college days if we are going to stay in front of the on-rushing avalanche of progress which is changing the dimensions of both the business and geopolitical orbit of the world in which we live.

Milwaukee P.A.'s Hear Public Relations Talk

Dr. Tennyson Guyer, director of public relations for the Cooper Tire and Rubber Company, addressed a recent meeting of the Milwaukee Association of Purchasing Agents. In a rapid-fire humorous talk, he injected just enough points about "Your Public Relations Is Showing" to make it quite emphatic.

Personal enthusiasm for the purchasing profession was highlighted as among many of the other good attributes which single out a successful purchasing agent. The crowd was kept in a constant uproar, and when it was all over, there were a number of thought-provoking features which Dr. Guyer stressed, which could be taken to the office and put into use.

A member of the Milwaukee Association of Purchasing Agents, William N. Bergemann, director of purchases of the Falk Corporation, participated in a purchasing seminar at the University of Minnesota at St. Paul. This seminar was sponsored by the Twin Cities Association of Purchasing Agents.

Mr. Bergemann, a valued and active member of the N.A.P.A., spoke on "Application of Scientific Management of the Purchasing Function."

GENERAL ELECTRIC TURNS WATER COOLER INTO "BUSINESS MACHINE"

...cuts cost of coffee break



Model shown JCH 1

New General Electric Hot and Cold Water Coolers

PIPING HOT WATER ALWAYS ON TAP—for coffee, tea, chocolate, soups and other instant beverages.

REFRESHING COOL WATER ALWAYS ON TAP—fully insulated, sanitary cooling unit provides ample supply of cool drinking water.

ROOMY REFRIGERATED COMPARTMENT stores bottled beverages, fruits, lunches, milk, cream—serves 48 ice cubes.

This on-the-job refreshment center saves coffee break time worth real money. Actual records spotlight the economy and efficiency it brings plants and offices, with savings in some instances running to thousands of dollars a year. And employees like its convenience—also like getting their refreshment at lower cost.

A model for every need—pressure type, hot and cold—standard pressure and bottle types—new economy-size Junior Cooler. All backed by General Electric's 5-year Protection Plan. Call your local General Electric Water Cooler Dealer. General Electric Co., Commercial and Industrial Air Conditioning Dept., Bloomfield, N. J.

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GENERAL  ELECTRIC

In Canada, Canadian General Electric Co., Ltd., Montreal

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Purchasing People In The News

W. D. Schelbe has been appointed director of purchases for the Wolverine Tube Division of Calumet & Hecla, Allen Park,



W. D. Schelbe

Michigan. Mr. Schelbe will be responsible for coordinating the purchasing activities of the company's plants in Detroit, Michigan, Decatur, Alabama, and the London, Ontario mill of the division of Calumet & Hecla of Canada, Ltd. He will make his headquarters at the division's executive offices in Allen Park. Mr. Schelbe started his career with the company as a buyer in 1939. His previous positions included assistant purchasing agent at the Detroit plant, purchasing agent of the Decatur plant and assistant director of purchases for the division.

Walter E. Templer has been promoted to purchasing agent of mill and mine supplies for Jones & Laughlin Steel Corporation, Pittsburgh. Mr. Templer succeeds A. Norval Johnston, who has retired as assistant vice president of purchasing. Mr. Johnston has been with the corporation for 48 years. He is a member of the Pittsburgh Chapter of the Purchasing Agents Association, and is a former vice president, president and national director of the association. Mr. Templer, previously a senior buyer of construction, has been associated with the firm since 1939.

Eugene Brennan has been named senior purchasing agent of Wilmot Castle Company, Rochester, New York. He succeeds Har-



Eugene Brennan

vard Castle who has retired. Mr. Brennan joined the firm in 1941 as assistant to the senior purchasing agent. Previously he had been associated with Delco Appliance Division of General Motors and Rochester Gas and Electric Corporation. Mr. Brennan is a member of the National Association of Purchasing Agents and the Purchasing Agents Association of Rochester.

Continental Aviation and Engineering Corporation, Toledo, Ohio, has promoted **John W. Wat-**



John W. Watson

son to director of purchases. He has been in charge of purchase analyses since he joined the company at its Toledo production headquarters.

Chrysler Corporation, Detroit, Michigan, has named **John D. Moran** director of procurement programming. He will be responsi-



John D. Moran

ble for administering the procurement programming, timing, engineering coordination and technical services activities of the corporation's purchasing department. Mr. Moran has been associated with the corporation for 29 years. During that time, he has held many important positions, including director of manufacturing for the defense operations division and director of organization. Prior to his new assignment, he had been on special assignment with the administrative vice president. Mr. Moran is a member of the U.S. Industry Advisory Board to the secretary of Commerce.

Lamson Mobilift Corporation, Portland, Oregon, has promoted **Edward Bloom** to purchasing agent. Mr. Bloom joined the organization in 1941 and advanced through important positions until his recent appointment. He will make his headquarters in the company plant #2 in Portland.

Robert Gay, Jr., has been named administrative assistant in the purchasing department of the Baroid Division of National Lead Company, Houston, Texas. Formerly Mr. Gay had been assistant manager of the Foreign Trade department of Houston Chamber of Commerce.

RS for VIP*



Model 668 Swivel Chair
Padded back rest, 4-way adjustable. Foam rubber seat, with exclusive Micro-Hite adjustment, 21" to 27" or 26" to 32".



Model 515 Adjustable Chair
4-way adjustable back rest. Welded steel construction. Seat height adjustable 17" to 25" or 24" to 32".



Model 625 Swivel Chair
4-way adjustable back rest. Exclusive Micro-Hite seat adjustment, 17" to 23"; 22" to 28"; or 27" to 33".



Model 501 Stationary Stool
Welded steel, no exposed bolts, chip-resistant grey enamel finish. Available in eight seat heights.

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... for Value-Inclined Purchasers



Royal Verti-File

For compact instant-access filing. Adjustable shelves. Single or double-face units. Over twice the capacity of drawer-files in $\frac{3}{4}$ the floor space.

Royal Industrial Seating keeps workers efficient, alert and comfortably relaxed... all day long... with resulting production increases up to 12% by *actual test!* *Royal* chairs and stools are completely adjustable in a few seconds to fit the personal preference and posture needs of the individual. Minimizes needless fatigue... pays off in fewer accidents, errors and costly rejects. 29 sturdy, durable models for every job, every working condition.

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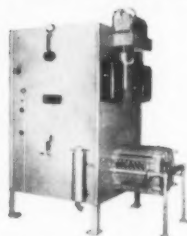
HILCO

OIL MAINTENANCE EQUIPMENT



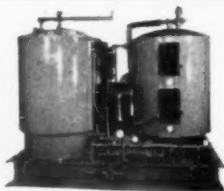
OIL RECLAIMER

For continuous oil purification in range of 2-100 gph. Removes all solids, acids and volatile contaminants.



PURIFIER-RE-REFINER

For all purification in batches of from 6 to 100 gallons. Removes all solids, acids and volatile contaminants.



HIGH CAPACITY RECLAIMER

Combines filtration for removal of solids and sludge with vacuum vaporization for removal of solids, acids, water, solvents, fuel dilution. Furnished in standard or custom built models to 600 gph.



FILTER

Furnished in capacities from 0.1 to 750 gpm. Various cartridges available for mineral and inhibited detergent oils.

Whenever oil is used it becomes contaminated and must be discarded or conditioned for further use. There is a HILCO to do this job for you. HILCO offers a wide range of oil purification units to meet every oil conditioning problem . . . stationary or portable. You can recover large quantities of oil at low cost. HILCO units are available for continuous or batch operation. And HILCO purification means complete oil purification.

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FILTERING, PURIFYING
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- Trucks
- Tractors
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- Gas Engines
- Automobiles
- Buses
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- Locomotives
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- Air Compressors
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- Hydraulic Equipment
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**THE
HILLIARD
Corporation**



Purchasing People

The appointment of **Jim Nelsen** as director of the procurement division of SPACE Corporation of Dallas and Garland, Texas has



Jim Nelsen

been announced. A graduate of Drake University, Mr. Nelsen has been associated for a number of years with aircraft manufacturing production and electronics. Formerly he has held executive positions with such firms as Glenn L. Martin Company, Southwest Airmotive Company, Norris Thermadore Corporation and U. M. & F., Inc. In his new capacity, Mr. Nelsen will take charge of purchasing and sub-contracting for the company's work in control systems, testing facilities and other types of ground support for propulsion aircraft and missiles, and in instrumentation and process control equipment for the oil and petrochemical industries.

Thomas J. Kauchek has been made director of procurement and inventory operations for the Service Parts and Accessories Supply Division of Chrysler Corporation, Detroit. Manager of the division since 1955, Mr. Kauchek joined the corporation in 1928 in the Dodge Main planning department. Three years later he moved to the Parts division where he served in various planning and procurement positions during the next 24 years.

Lawrence E. Roy has been named manager of staff functions for the Parts Division. Mr. Roy has been associated with the corporation since 1928 and has 27 years of experience with the divi-

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sion in procurement, planning and inventory operations. Since 1955 he has served as planning superintendent of inventory control.

The Anaconda Company, New York City, has announced the promotions of **Patrick F. Lee** and **Richard V. Wilson** to the positions of assistant to the director of purchases. Mr. Lee joined the company at its New York headquarters in 1929. Since that year, with the exception of short periods at the company's subsidiaries, Mr. Lee has been associated with the parent company's purchasing department. Mr. Wilson has been associated with the firm since 1946, where he has served continuously in the purchasing department.

The appointment of **William F. Ruzicka Jr.**, as manager of purchasing has been announced by Sylvania-Corning Nuclear Cor-



William F. Ruzicka, Jr.

poration, Bayside, New York. He will make his office at the company's production facilities at Hicksville, New York. Mr. Ruzicka has been purchasing agent for the Argus Camera Division of Sylvania Electric Products, Inc. In his nine years with Argus he was a draftsman, design engineer, project engineer for ordnance projects, assistant purchasing agent and purchasing agent. Before joining Argus, Mr. Ruzicka had been in engineering and design positions with Grumman Aircraft and McDonnell Aircraft Corporation. He holds a bachelor of science degree in aeronautical engineering and a master of business administration degree, both from the University of Michigan.

APRIL 14, 1958

Wherever you are ... there's an E.D. expert near you

As the map shows, there is an E.D. sales or service office close to you. What the map doesn't show are the more than 25 warehouses which permit fast deliveries of components or complete motors.

Built on years (over 75) of experience, the knowledge and reputation of Electro Dynamic back every sale.

Complete line of a.c. and d.c. motors from 1 to 300 h.p., Geared Motors, Selectrol and Selectron Variable Speed Drives and Motor Generator sets.

Telephone or write for Bulletin 50-A.



ELECTRO DYNAMIC
DIVISION OF GENERAL DYNAMICS
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BAYONNE, NEW JERSEY



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Industry Developments

And Now—Automation For Short-Run Production

New electronic control system makes Detroit-type mass production possible for small-lot production jobs. System cuts lead time between engineering drawing and actual production drastically.

A MAJOR CHANGE in industrial manufacturing methods may be in the offing as a result of a new development which makes automation practical for small-lot production runs. The development: Hughes Aircraft Co.'s Digitape electronic control system for machine tools.

Using punched tapes and transistorized digital computers, the all-electronic control system is extremely versatile, reducing tooling and setup time drastically. In effect, the new system substitutes simple tape changes for the usual costly tooling and setup operations needed for most machining jobs. This is the main reason Digitape makes automation feasible for short-run production operations. It has reduced the cost of getting into production markedly, so that production doesn't have to be of mass volume quantities to make automation pay off.

As Rollin M. Russell, Hughes' vice-president and head of the company's products group, points out, the new control system "makes available for the first time Detroit-type mass production techniques for small lot production—the kind of work that makes up approximately 90 per

cent of the machining operations performed by American industry."

Machine tools, of course, have been electronically controlled in the past. However, the Hughes system is the first successful application of automatic electronic controls to a series of machine tools working on successive operations and making a variety of parts at the same time.

In the prototype system demonstrated by Hughes at Los Angeles, the Digitape controls were used to operate automatically and in sequence a milling machine, a drilling machine, and a boring machine. The specially designed machine tools were supplied by Kearny & Trecker Corp., Milwaukee, which also helped in development of the new system.

In essence, here's how the Hughes' Digitape system works:

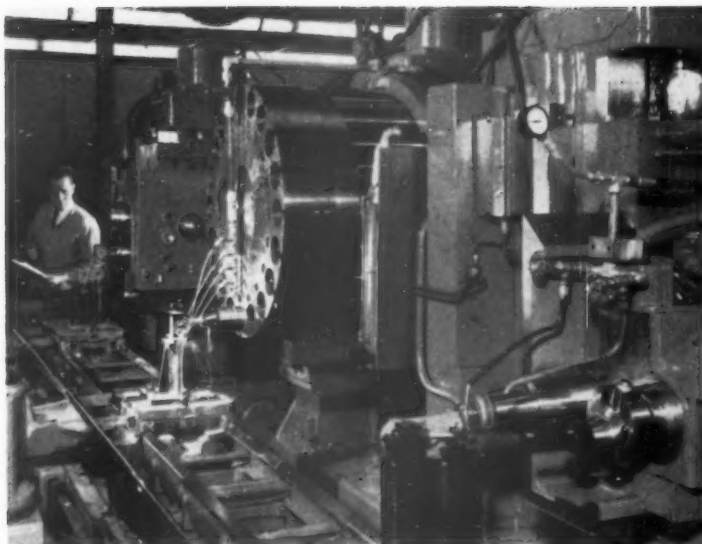
Starting with the blueprint of the part to be made, a planning sheet is drawn up which lists dimensions and the proper sequence of machining operations. From the planning sheet, a typist, using a special keyboard, transcribes the data on a punched tape. The completed tape is then inserted into a tape reader which feeds the information to the computing brain of the system.

Using the taped information, the computer section of the system gives measuring, positioning and cutting orders to the machine tools. In the demonstration given at Hughes, the only operations that were not automatic were the loading of unmachined castings on the conveyor line and the unloading of the finished parts after the automatic machining operations had been completed. If required, of course, even the loading operations could be automated.

Easy to Change Production

Among the many advantages offered by the Digitape control system is its ability to make several different parts on the line simultaneously. And changes in parts can be made even during a production run simply by splicing a change in the punched tape. Completely new parts can be put into production by using a new tape.

The tooling required with this system is on the average about 50 per cent less than with conventional machining operations and setup time is virtually eliminated. This of course greatly reduces the lead time from engi-



First all-electronically controlled machine tool line at Hughes Aircraft consists of milling, drilling and boring machines. New control system makes it possible to use automation for small-lot production jobs.

neering release to actual parts production.

Since the punched tapes can be stored, it's a simple matter to produce spare parts or to fill small quantity re-orders. The engineering know-how required for production of spare parts or for re-orders is in effect permanently preserved on tape. This means inventories of spare parts can virtually be eliminated.

Only one operator is needed to run the line and the typing operation required to make up the punched tapes can be learned after only a few hours of special instruction.

Now in Production

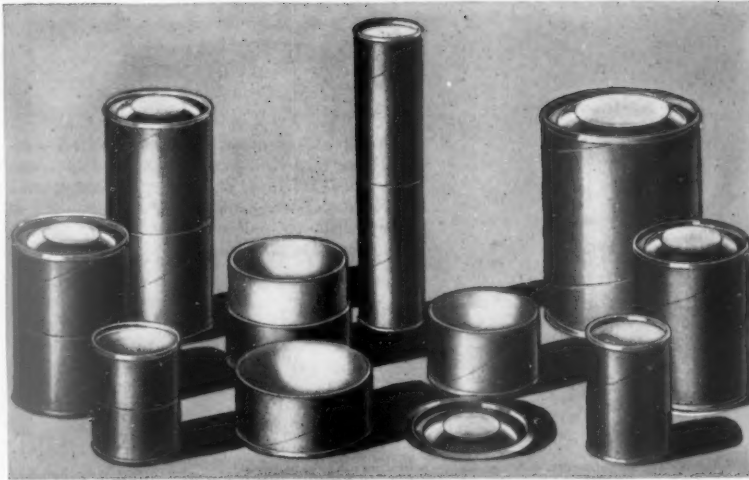
Currently being used by Hughes to produce aircraft electronic armament control systems, this new advance in automation is expected to be particularly helpful in speeding crash development of guided missiles where changes in specifications are more the rule than the exception.

It is Hughes' intention to make its control system (which can be used with as many machine tools as desired) available to all machine tool manufacturers and to manufacturers in other fields such as industrial processing.

All of these machined parts can be turned out simultaneously on Hughes electronically controlled line of machine tools.



Punched tapes tell the machine tools what has to be done during the automatic manufacturing run.



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These basic fibre containers meet all present day military and civilian specifications.

This diversified packaging service . . . the convenience of our plants . . . ensure PROMPT DELIVERIES . . . with added savings to you.

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Made to conform to both grades of MIL-C-3955, Type II, or MIL-C-2439 and other specifications. Produced in diameters from 7/8" and in lengths desired. This container is easily sealed by use of tape to specification JAN-B-127.

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Made to conform to MIL-C-3955, Type I and other specifications. Diameters from 1" and in lengths as required. One metal end seamed on, the other end shipped loose. A machine for attaching the loose end is available on a rental basis.

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Buhr Machine Tool Company, Ann Arbor, Michigan, has completed a major plant expansion which increases its production capacity by about 75 per cent. The expansion consists of two main bays: one devoted to heavy machining and the other to assembly of multiple-operation machines. At a cost of about \$1,000,000, the new equipment includes what is believed to be the largest planer-mill in southeastern Michigan. It is designed for mass production of standard bases columns and other components for building-block type machines. The assembly wing adds sufficient area to permit the assembling and testing of several complete production lines at one time.

The name of Bendix-Skinner Division of **Bendix Aviation Corporation**, Madison Heights, Michigan, has been changed to **Bendix Filter Division**. The division's West Coast Poroloy Equipment, Inc. Plant, Van Nuys, California, has been designated as the west coast branch of the Bendix Filter Division. This plant has been operated as a wholly-owned subsidiary of the corporation since its acquisition in August, 1957.

Brazed assembly inspection facilities have been expanded at **Stainless Processing Division of Wall Colmonoy Corporation**, Detroit, Michigan. The division has added a new mass spectrometer leak detector, which is capable of exhausting parts down to below one micron pressure for vacuum testing with helium.

The Power Piping & Sprinkler Division of **Blaw-Knox Company**, Pittsburgh, has been awarded a contract for the engineering and installation of the sprinkler system for **Pittsburgh Plate Glass Company's** new Decatur, Illinois, plant. The fire protection system includes more than a mile of 6"-8" piping and 10" underground supply piping. Approximately 2,500 sprinklers will be installed throughout manufacturing and

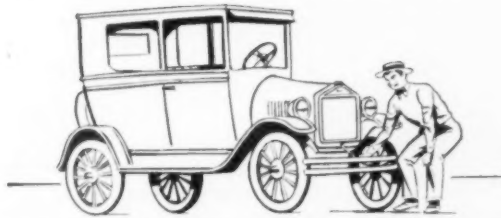
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warehouse portions of the plant. According to Pittsburgh Plate Glass Company, the new plant will contain approximately 450,000 square feet of manufacturing and storage space. Planned production at the highly automatic plant includes all commercial thicknesses of window and sheet glass.

Allis-Chalmers Manufacturing Co., Milwaukee, Wisconsin, has announced plans for construction of new engineering, development and research laboratories in Greendale, a Milwaukee suburb about two miles south of the company's West Allis Works. The new facilities will be housed in a one-story masonry, glass and steel panel building to be erected on a 30-acre site at South 60th and West Grange Avenue. A staff of 150 to 200 scientists, engineers, draftsmen, technicians and administrative personnel will be employed at the facility. The initial building will have 23,000 sq. ft. of space for laboratories where research, scientific studies and analyses will be carried on. Offices and a fully equipped machine shop will also be located in this building. Among the projects to be carried out by the laboratories will be design, construction and testing models, mockups and prototypes of nuclear reactors and associated equipment. The most modern electronic calculating equipment will be used by the engineers and scientists.

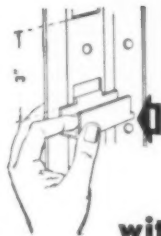
An agreement to lease certain pilot plant facilities of the Riegel Paper Corporation has been announced by the **Du Pont Company, Wilmington, Delaware**. Use of the pilot plant equipment, which will be operated by Riegel personnel, will result in expanded development work on the use of synthetic fibers in paper, according to Du Pont, and will permit major scaling-up of laboratory findings. Appropriate information developed in the course of the program will be disseminated to the paper industry by Du Pont to assist paper makers in taking advantage of the properties of synthetic fibers in their products.

bolts and nuts for steel shelving are as out of date as the model "T"



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**with the "works-like-magic"
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Borroughs Steel Shop Equipment**



Sturdy — functional — good looking — quality built and economically priced. Line includes work benches, portable and semi-portable units, utility carts, tool stands, shop desks and table. Designed to meet your most exacting needs and pocket-book.

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Hundreds of similar boxes are shipped every month to near and distant points... for project "Hush"... for a new adding machine... for tomorrow's automation. The trust of industry is well placed in the Chatillon Engineers who are heir to more than 120 years of spring design and manufacturing experience.

Next time you have a special spring problem, let a Chatillon Spring Engineer help you. If you want quality springs on schedule, at competitive prices, send your blueprints to Department P-6.



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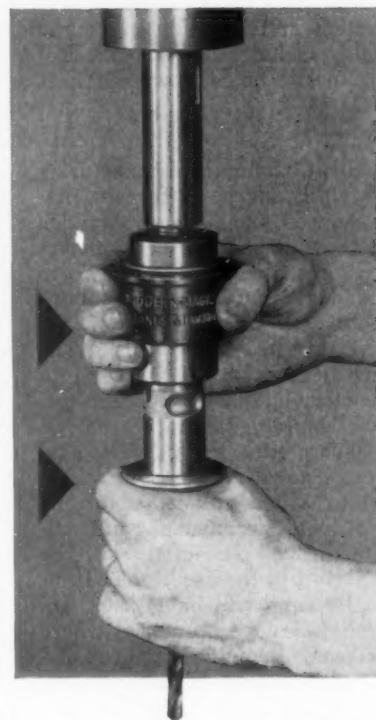
Industry

Ground has been broken for a new 11,400 sq. ft. research and development building at **The Cleveland Crane & Engineering Co., Wickliffe, Ohio.** The building will include a modernly equipped air-conditioned engineering department and complete shop and testing facilities for assembling, handling and testing equipment under development. It is believed the new building, which is scheduled for completion in June, will be a tremendous asset for accelerating the development of ideas for product improvement, as well as for completely new products and production methods.

Porter's Vulcan Crucible Steel Division will now be known as **Vulcan-Kidd Steel Division, Aliquippa, Pennsylvania,** according to a recent announcement. The Kidd Works which was recently acquired by **H. K. Porter Company, Inc.,** is located in Aliquippa adjacent to the Vulcan Works. This combination represents 110 years of service to industry. Kidd produces drill rod and custom cold drawn special shapes. Vulcan produces carbon, alloy, and high speed steels.

With the arrival of a 100,000-gallon barge of 50 per cent standard grade liquid caustic soda from its Calvert City, Kentucky plant, **Pennsalt Chemicals Corporation, Philadelphia, Pennsylvania,** has established new bulk storage and distribution facilities in Pittsburgh. The first barge shipment was made to the McClintic-Gordon Co. terminal at McKees Rocks, Pa. where the company has leased bulk storage facilities to provide more service to such caustic-consuming industries as steel, metal finishing, textiles, soapmaking, refining, and chemicals. Large bulk shipments to the Pittsburgh area are the result of recent additions to the firm's liquid caustic barge fleet and the expansion of the Calvert City chlorine-caustic plant. This plant, using modern mercury cells, was enlarged last year.

NEW XTRA-SAFE MODERN-MAGIC CHUCKS & COLLETS



Solid, one-piece body and shank construction.

EXTRA WIDE, NO-PINCH LOCKING RING

New flanged top on the locking ring protects hands from contact with upper retainer spring and spindle. Extra width assures that the lower retainer spring will always be covered, regardless of position. No pinched hands!

PROTECTED, WIDE FLANGED COLLETS

Guard against injury when handling collets with greasy hands. You can't drop them, and hands won't ride up into the chuck.

See them at the
A. S. T. E. show
BOOTH NO. 1504



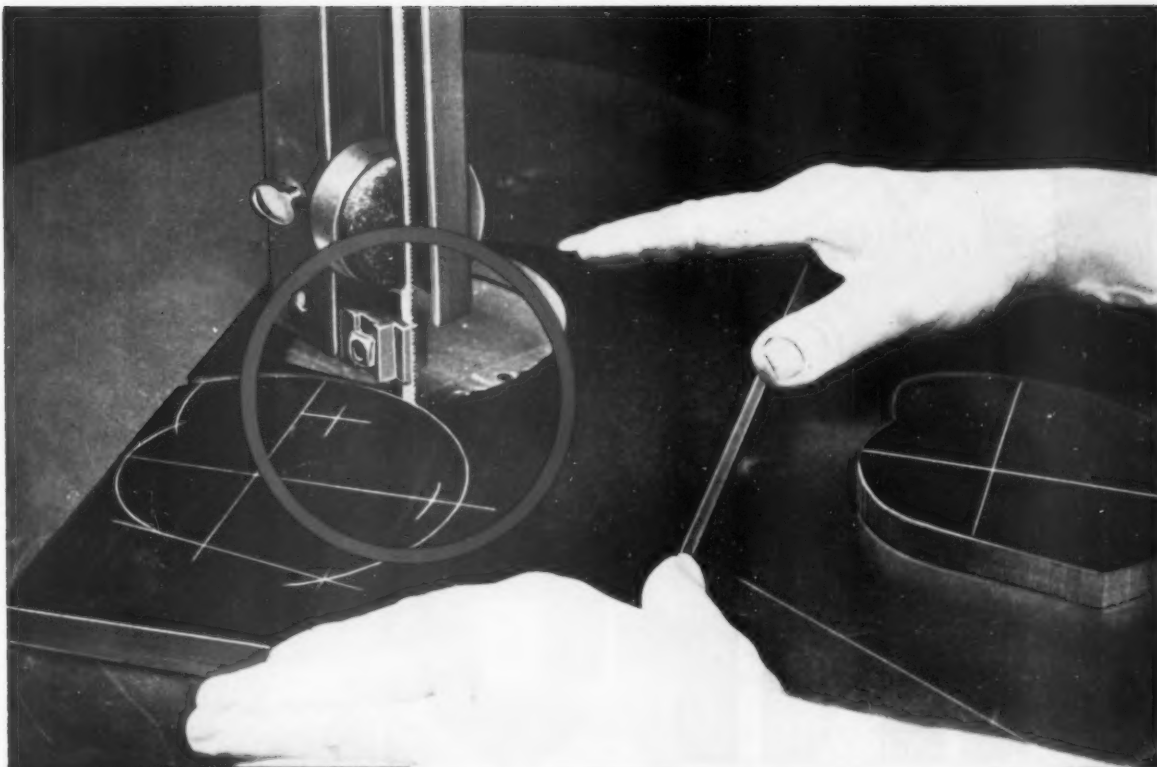
**make live-spindle tool changes
"on-the-run"—safely!**

**THREAD TOOL DIVISION
JONES & LAMSON**

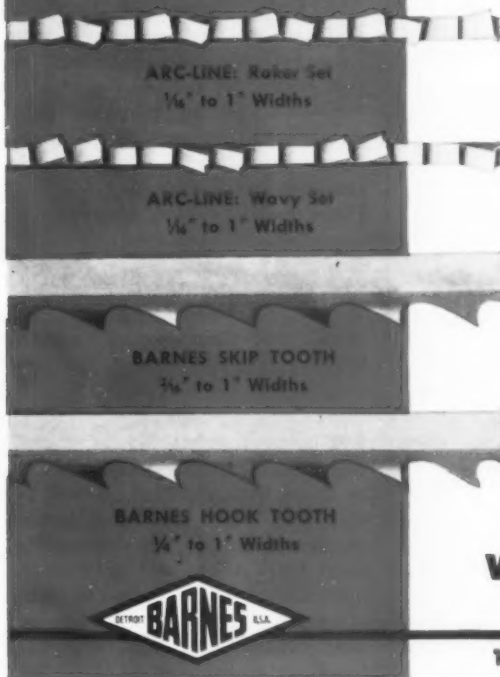
**JONES & LAMSON MACHINE COMPANY
540 Clinton St., Springfield, Vt., U. S. A.**

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PURCHASING



PUT BARNES BAND SAWS WHERE CUTTING COUNTS



Barnes Hard Edge, Flexible Back Band Saws are made for high production metal sawing at lowest cost per cut.

Teeth are accurately milled and set, perfectly hardened under carefully controlled processes. The back is kept flexible. Results are band saws with maximum cutting life to keep your costs down.

Barnes band saws are *packaged to fit your needs:*

- 100 ft. Coils • Safe, Convenient
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Industry

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your product...if electronics is now
at work for you, INFO can become
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Tube Distributor to tell you how!



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Electron Tube Division Harrison, N. J.

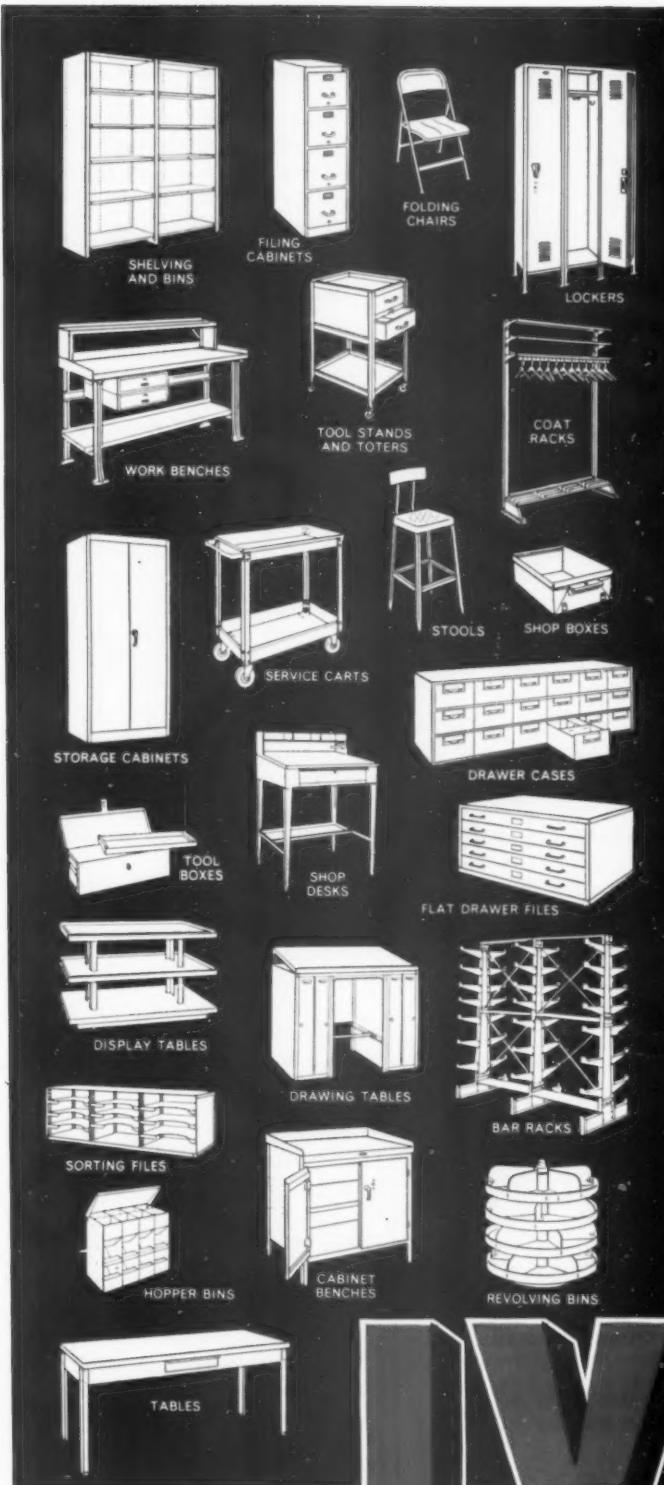
The Iroquois Paper Company, has been formed to render a new custom service in connection with all standard and specialty papers and packaging for industry. Marv Gordon, founder and president of the new company has for the past 15 years been representing the Chicago Paper Company. The Iroquois Paper Company, which began operations recently, is located at 117 W. Harrison Street, Chicago, Illinois.

The Federal Machine and Welder Company, Warren, Ohio, manufacturer of resistance welding machines and Warco mechanical presses, has acquired control of the Berkeley-Davis line of automatic arc welding machines. Federal's plant will be available for the increased production of Berkeley-Davis machines and its nationwide district representatives will provide a sales organization for Berkeley-Davis products.

Olin Mathieson Chemical Corporation, New York, has announced plans to produce corrugated containers in Cincinnati. The former plant of Lunkenheimer Co. has been leased on a long-term basis. The plant will be remodeled. It will house an 85-inch corrugating machine plus auxiliary equipment, to be transferred from the division's present facilities in West Monroe, La. Plant operations in Cincinnati are expected to begin about the middle of the year.

The Day Company of Canada Limited, a subsidiary of **The Day Company**, Minneapolis is now completing an addition to their Rexdale (Toronto) Ontario plant. The size of the present plant will be more than doubled. It will be equipped with the latest power machinery for custom fabricating sheet steel, alloys and light structural materials in addition to manufacturing their regular line of dust control and bulk material handling equipment.

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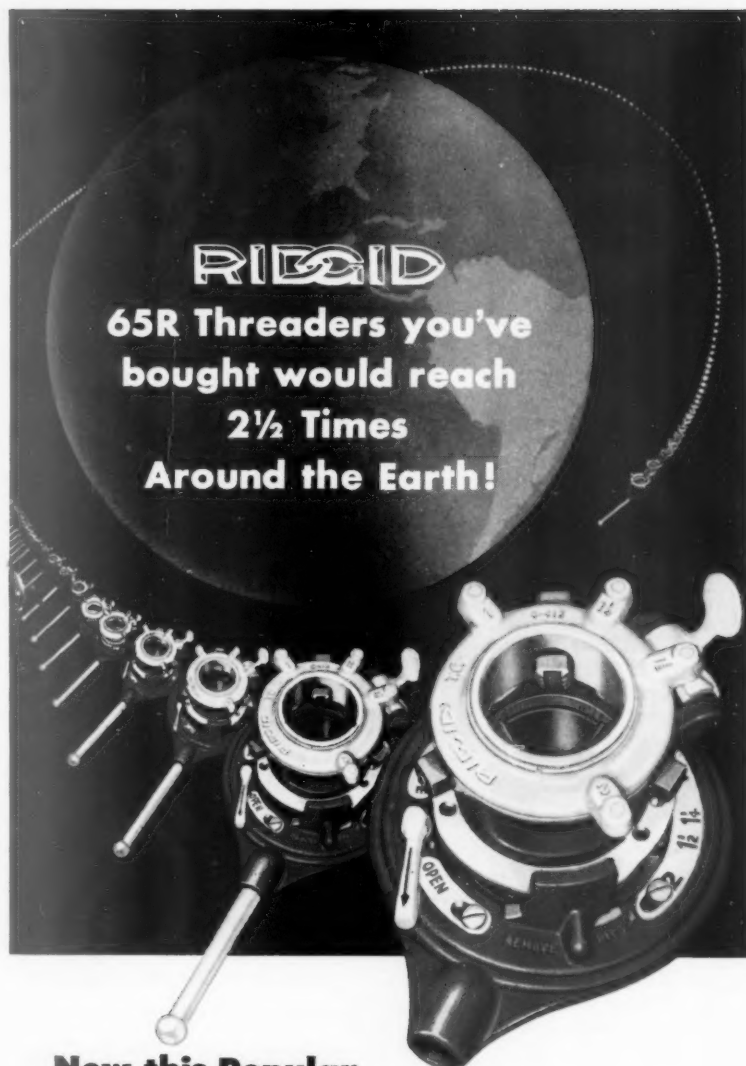
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offers you 3 exclusive advantages



1. Only die stock with True-Centering work-holder—no more crooked threads, no time or pipe wasted.
2. Only Jam-Proof diestock—automatic kick-out after standard thread is cut by hand or power.
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at your Supply House*

The Ridge Tool Company • Elyria, Ohio, U. S. A.

For More Information Write No. 273 on Inquiry Card—Page 32

Industry

Smith-Blair, Inc., South San Francisco, California, has announced the opening of a new 6000 square foot assembly plant, warehouse, and regional sales office in Henderson, Texas. The new facilities will provide better service for users and jobbers of the company's pipeline couplings, connections, and clamps in the midwest, southern, and southwestern areas. Similar branch operations are located in Greensburg, Pa., and South Gate, Calif.

Regent Jack Manufacturing Company, Downey, California, has organized to specialize in fabrication of missile and weapons transports. The company expects to fabricate a wide range of weapons transports, from highly-mobile, space saving dollies to versatile, specialized transports capable of carrying weapons weighing more than 12 tons. The company specializes in the design and development of aircraft jacks and other industrial ground handling equipment.

Monsanto Chemical Company, St. Louis, Missouri, has purchased the physical assets of Filtered Rosin Products, Inc., of Baxley, Ga., a manufacturer of paper size and other gum rosin products. The acquisition will continue to operate as a separate and newly formed Filtered Rosin Products Company employing the personnel of the former company. Assets acquired by Monsanto include facilities at Baxley, Douglas and Alamo, Georgia.

Kennecott Copper Corporation, New York City has announced that the company's new electrolytic copper refinery near Baltimore, Maryland will have an initial capacity of 16,500 tons a month. The original plan called for an installation with an initial capacity of 7,000 tons monthly and costing approximately \$20,000,000. For many years most of the corporation's electrolytic refining has been done by the American Smelting and Refining

PURCHASING

Company. However, an agreement has just been reached with that company whereby Kennecott's refining commitments to them will be reduced effective July 1, 1960, thus permitting the increase in the initial capacity of Kennecott's refinery. The larger plant will cost approximately \$30,000,000 and will employ 570 people. Some copper from the firm's domestic mines, as well as copper from its Chilean subsidiary, Braden Copper Company, will be used to supply the enlarged plant. The refinery will furnish electrolytic copper for markets in both Europe and the United States.

Engineering design contracts for another expansion of **Texas Eastman Company's** polyethylene plant in Longview, Texas have been awarded to the **Girdler Construction Division of National Cylinder Gas Company, New York.**

The contract includes engineering and procurement of equipment and materials for the expansion, which will increase the plant's polyethylene production capacity to 85,000,000 pounds a year by the end of 1958. It is the third such contract for the company at this plant, starting with engineering design of production facilities for the original plant, completed in 1954 and expanded three times since. Texas Eastman, a division of Eastman Kodak Company, recently has announced that the increase in its Tenite polyethylene capacity will include both the conventional low-density type and a new medium-density product, designated Series 100.

A new company, **California Chemical International, Inc.**, has been formed to take over the expanding export market of **Oronite Chemical Company, San Francisco, California.** Like its sister company, Oronite, the new firm will be a subsidiary of the Standard Oil Company of California. It will have executive offices in San Francisco and branch offices in Geneva and Panama City. Operations will begin immediately, according to the president of the new company.

APRIL 14, 1958

Campbell "Customized" Sling Chains

PUT THE ASSEMBLY YOU NEED "YESTERDAY" ON THE JOB TODAY!

Now, the new Campbell "Customized" Sling Chain Assembly Program gives you sling chains as you want them . . . when you want them. Here's how this fast, flexible service works for you. You can: a) Maintain your own stock of Campbell component parts; and assemble slings right on-the-job; b) get immediate delivery on assemblies and components from your Campbell Distributor; c) get immediate shipment ordered through your Campbell Distributor on slings made-up at the nearest Campbell Warehouse or Factory.



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Campbell Certificates of Test protect you both for Campbell component parts, and the complete "Customized" Assemblies you get from your Campbell Chain Distributor or Warehouse. Call your Distributor for details on how the Program meets the requirements of your operation.

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CAMPBELL CHAIN Company
 York, Pa.—W. Burlington, Iowa
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**"FOR
IMMEDIATE
DELIVERY!"**

NUTS



SCREWS



BOLTS



WASHERS



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OF NEW YORK**

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NEWARK 365 • WO 6-0600

ATLAS SCREW & SPECIALTY CO., INC.
DEPT. P
450 BROOME STREET, NEW YORK 13, N. Y.

For More Information Write No. 275
on Inquiry Card—Page 32

Industry

Edgcomb Steel of New England, Inc., Nashua, New Hampshire, has announced the acquisition of a new warehouse in Slatersville, Rhode Island a suburb of Woonsocket. It was originally built by the Rhode Island Industrial Development Corp. The building contains 40,000 square feet and is serviced by the New Haven railroad. Edgcomb is now modifying the building for warehouse operations. This plant will be taken over from their present Pawtucket, Rhode Island location, which will be closed in the near future. The company plans to expand their inventory and services in these larger facilities and will handle aluminum, brass, stainless and carbon steels.

The Quincy Stove Manufacturing Company, Quincy, Illinois, has announced their official name has been changed to **Monogram Industries, Inc.** The new name will more readily identify the products that have carried the trademark name of Monogram for almost 60 years.



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For corrugated boxes with clean, sharp printing, better see H & D.

HINDE & DAUCH
Division of West Virginia Pulp and Paper Company

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News

Corrosion-Resistant Alloys Now Plated

Four highly corrosion-resistant alloys have been successfully rolled in clad plate for the first time by the Lukens Steel Company.

Samples of these new clad plates—Hastelloy B, Hastelloy F, Hastelloy C and titanium—were displayed at the annual convention of the National Association of Corrosion Engineers in San Francisco. In clad form, these alloys will have applications in the chemical, petroleum and petrochemical industries where corrosion is a major problem.

The cladding process uses heat and pressure to make permanent, integral bond between a layer of costly materials and a thicker layer of a relatively inexpensive backing material. The resulting clad plate offers the qualities of the costly solid material at a price significantly below that of solid material of comparable gage.

The Hastelloys are ferroalloys using relatively large amounts of nickel and chromium, in addition to other alloying elements, to achieve their corrosion-resistant properties.

Nonferrous Scrap Upturn Predicted

A marked upturn in demand for nonferrous scrap metals in the latter part of the year was predicted by Max Bluestone, president of the Metal Dealers Division of the National Association of Waste Material Dealers, at its recent annual convention.

"The scrap iron and steel price and consumption have had a tremendous bearing on the flow of nonferrous scrap," he said. "We all hope that those markets will improve so that there will be more material available."

Mr. Bluestone noted "for the first time in many years there are certain items that we are unable to handle because of the higher freight rates, lower market values and continued higher handling costs." He cited certain zinc-base scrap and copper-content materials as examples.

APRIL 14, 1958



**RACK 'N REEL...
THE FIRE HOSE
THAT LASTS!**

This H-R hose delivers the full measure of fire protection you've been looking for! Compare these outstanding features:

Longer Life—A high quality neoprene tube assures years of dependable service and eliminates undesirable weeping of unlined linen hose. **Highly Adaptable**—Fits easily into most standard racks and reels. **Far Stronger**—Dacron filler makes it *three times stronger* than all-cotton construction. **More Flexible**—The special construction, plus high grade materials, assures maximum pliability. **Lighter Weight**—A 50 ft. length of Rack 'N Reel hose weighs only 9 lbs.

And compare these advantages: Rack 'N Reel hose eliminates frequent replacement. It insures immediate water pressure at the nozzles. It eliminates undue water damage caused by weeping. Its lightness, strength, and pliability make Rack 'N Reel hose safe and easy to handle. Specifications: single jacket; 300 lb. test. Maximum lengths, 100 feet; 1½" I.D. Rack 'N Reel hose is stocked locally—contact your nearest H-R district for price and delivery. To find out how Hewitt-Robins products and services can help you, consult your classified telephone directory for the nearest H-R representative, or contact Hewitt-Robins, Stamford, Connecticut.



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Continental Steel Containers

- Positive protection
- Superior lithography
- Fast delivery
- Top quality
- Full line
- Re-usable
- Famous Continental service

Call Continental when you need steel containers. Get top quality plus outstanding Continental service. Engineering and research assistance available to help you solve any packing problem.



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Airless hot sprayed enamel lining assures complete interior coverage, guarantees 100% protection.

CONTINENTAL CAN COMPANY

Eastern Division: 100 E. 42nd St., New York 17
Central Division: 135 So. La Salle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4

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News

Dallas P.A.'s Get Seminar Report

The Purchasing Agents Association of Dallas received a combination report and schedule on purchasing seminars from the education committee chairman, Ben Brown. The report stated that during 1957 a total of nine seminar programs, carried out as a function of the education committee, were held, with one conducted as the regular program of an association meeting. Twenty-four members of the seminar actively participated in these meetings, either as discussion leaders or assistants. Most of the members took part in the question-answer portions of the programs.

The committee has received letters of inquiry from other district associations, and the association has gained recognition nationally as a top grade education program for purchasing men.

"What Do We Do Now?" Asked of Old Dominion P.A.'s

The winter meeting of the Old Dominion Purchasing Agents Association, Inc. was held at Hotel Roanoke recently. G. L. Nunnally, public relations chairman, said one of the highlights of the program was a dinner address by O. M. Miles, office engineer, Norfolk and Western Railway Co., Roanoke. The banquet session was presided over by R. F. Misfeldt.

Mr. Miles, a nationally prominent speaker, has been with the Norfolk and Western Railway Co. for more than thirty years, and at one time was in charge of the railroad's statistical division. His subject was "What Do We Do Now?"

Following registration in the morning, members of the association were conducted on a tour of the Norfolk and Western Railway's shops and storehouse by R. G. Bishop, purchasing agent for the railroad. Closed committee meetings were held in the afternoon and a social hour preceded the banquet. The first day's ses-



It Changed Buyers' Habits

If you're still buying machine key stock in 12-ft. lengths, storing it in steel racks, then moving those unwieldy lengths to your production area, you're missing a good bet to reduce storage and handling costs—save production time and lower your key stock inventory. Buy Mak-A-Key, the key stock that's packaged in convenient 12-inch lengths and can be stored close to your assembly area. Just cut file and fit. Save time, reduce production steps, lower down time.

STANDARD ASSORTMENT in sturdy fiber-board container: 3/16, 1/4, 5/16, 3/8, 7/16, 1/2 in. squares.

New 7-11 Kit—7 sizes fit 11 keyways, from 1/8" sq. to 7/16" sq. Additional sizes available.

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See how felt fits in with your products!

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FREE Samples and Applications of Industrial Felt.

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PURCHASING

sion ended with a dance in the hotel's Pocahontas Room.

A closed meeting for a discussion of association business opened the Saturday session followed by a forum on "Standardization" at which Douglas W. Laird of the Virginia-Carolina Chemical Company was the moderator. The session closed with a meeting of the board of directors of the association.

Robert E. Misfeldt, of Narrows, purchasing agent for the Celanese Corp. of America, is president of the Old Dominion Purchasing Agents Association, Inc. The association is composed of more than one-hundred executives of purchasing departments in various commercial enterprises and governmental agencies.

Omaha P.A.'s Have Purchasing Conference

The Greater Omaha Association of Purchasing Agents recently sponsored a purchasing-management conference at the University of Omaha. The conference featured two speakers James J. Ritterskamp, schooled in both business administration and the law, and now vice chancellor at Washington University of St. Louis, his alma mater, spoke on the "Legal Aspects of Purchasing." Stuart F. Heinritz, senior editor, PURCHASING magazine, and a three time winner of the Industrial Marketing Award for Editorial Achievement, spoke on the "Public Relations Implications of Purchasing," and the "Management Aspects of Purchasing."

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GOLDEN KNURL HOLDS EXACT JAW OPENINGS AUTOMATICALLY!

NO BUTTONS ... NO LEVERS ... NO GADGETS

Available in FIVE popular sizes

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4", 6", 8", 10" & 12"

Use it like an ordinary "adjustable". Merely turn Golden Knurl, jaws click automatically into desired opening ... even non-standard and foreign sizes. Jaws won't work loose. Drop-forged, fine Protoloy steel. Thin head for tight places. Highly polished, chrome plated. Job tested and approved by mechanics, coast to coast. Try the Klik-Stop now!

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Sandsteel's quality-control in manufacturing holds spring quality consistently high—spring after spring, shipment after shipment. For high quality power springs made to your specification, contact Sandsteel.

Special Quality Strip Steel
—With extraordinary fatigue life...rolled to exacting close-tolerance specifications is used for Sandsteel springs.

The quality strip steel is precision-cut to customers' specifications.

Induction heat treatment prepares the spring steel ends for special shaping required in each instance.

SANDSTEEL SPRINGS

*For Consistent High Quality
Protected At
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Precision spring fabrication requires close and exacting work by Sandsteel personnel.

Sandsteel springs are subjected to exhaustive tests in the Sandvik laboratory to insure uniform quality and performance.

Sandsteel springs of many shapes and sizes for a variety of product applications are assembled for final inspection prior to shipping.

SANDVIK STEEL, INC.

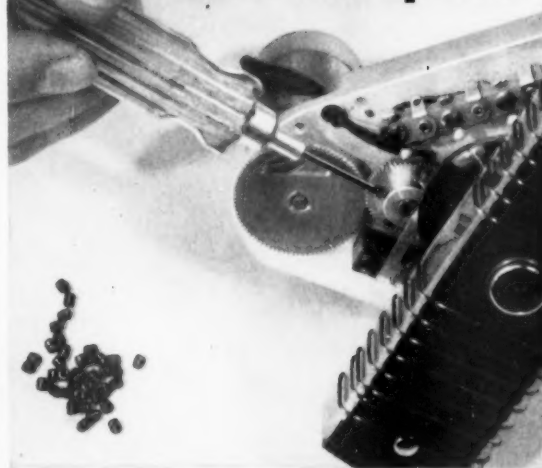
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Fair Lawn 4-6200

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Manufacturers Of
Quality Springs
For Over 30 Years

88-1227

For More Information Write No. 283 on Inquiry Card—Page 32

designers pare 40 lbs from radio compass



... but stick to Bristol socket screws

Engineers at Aircraft Radio Corporation, Boonton, N. J., have done an outstanding job of miniaturization in their new ARC Type 21 Automatic Direction Finder—reducing bulk 60% and weight to only 19.1 lbs—as against 60-100 lbs for older models, with no sacrifice in performance.

Like many other ARC navigation and communication aids for aircraft, the new direction finder uses Bristol Multiple-Spline socket set screws in many places such as the antenna shown above during assembly. ARC engineers particularly like these Multiple-Spline features:

1. Production simplification—ARC experience has shown that the wrenches grip more uniformly and securely with the Multiple-Spline screws. Assembly is faster and easier.

2. Performance reliability—a vital factor in ARC's equipment. Bristol Multiple-Spline set screws hold fast under shock and vibration because they can be wrenched up tighter.

Bristol socket screws—most complete line on the market, industry standard hex, as well as Multiple-Spline sockets—are sold by leading industrial distributors. See your distributor. He can frequently give you valuable help on your particular problems and save you time on deliveries from his complete stocks.

A. B. 2

Precision socket screw manufacturers since 1913



*Made in sizes as small as No. 0 in Alloy Steel and Stainless Steel. Cap screws up to 1 1/2" diam.

THE BRISTOL COMPANY Socket Screw Division
Waterbury 20, Conn.

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FIBRE-METAL
Monarch® FACE SHIELDS

... give you **EVERYTHING** for safety and long life!

Model F-300

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ACCESSORY EQUIPMENT (All Interchangeable):
FOR WELDING AND SCARFING, GENERAL PURPOSE WINDOW, FOR HEAT PROTECTION

COMFORTABLE AS AN OLD HAT, this Monarch® F-300 Face Shield gives you ALL that Fibre-Metal's long and successful experience in designing and engineering really practical protection can deliver. It is economical because of Fibre-Metal's large and efficient production equipment and methods. You get more because of its comfort and durability... and versatile safety uses! Maximum safety to eyes and face bring peace of mind, better and more profitable workmanship. Be sure your face protection is by FIBRE-METAL!

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We will be pleased to receive your inquiries.

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Fully illustrated 16-page booklet describes in detail Alcoa's unmatched facilities for welding, rolling, brake forming, bending, spinning, finishing, testing, complete engineering-fabricating services.



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Company _____
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ON THE MOVE...
in a hurry**

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RATCHET TOOLS**

Furnished in three sizes, from 1/8" to 2" capacity, the TOLEDO Drop Head Pipe Threader offers light, handy threaders for all-round work. Ideal for close corners, tiresome overhead threading, wherever time means money. Thousands of these handy threading tools attest to their value and popularity. Dies are changed in seconds by simply pulling a pawl—the die drops out. Slip in another and you are ready to go. If you haven't tried the TOLEDO Ratchet Threader, see one at your supply house . . . next trip.

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Toledo 4, Ohio




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No. 22 VISE**

For quality at a low, low price the TOLEDO 22 is best. Solid, dependable, timesaving . . . its Acme threads insure long wear. For a more positive grip, use the TOLEDO 25. Its five jaws eliminate any torque slippage. 1/8" to 4 1/2" capacity. Both are typical TOLEDO quality tools.



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**THIS is No Ordinary
Power Hack Saw Blade**



This is the *unbreakable* MARVEL High-Speed-Edge Hack Saw Blade—the first bi-metal blade—invented, developed and introduced by MARVEL. This blade was developed to cut any material from the free machining steels to the toughest alloys, fast, accurately and economically. Just one type blade to handle any job—no switching blades to cut different materials.

MARVEL blades can be tensioned from 200% to 300% more taut than ordinary blades. This advantage permits heavier feed pressures to be used without deflection or fear of breakage.

This rugged cutting tool assures outstanding economy, accuracy, long life and complete safety—it is *unbreakable*.

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FB-1021

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Manufacturers of the Outstanding MARVEL Metal Saws
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One dependable quality

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**FASTER UNIFORM
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PROTECTION**

Cost no more — save you more

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Form 48

Manarch

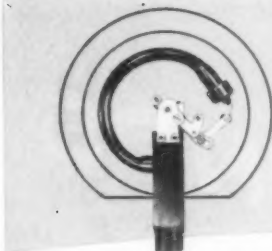
ELECTRIC CORPORATION

Jamestown, New York



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STAINLESS!



—from inlet to tip

Now the superlative Mastergauge is available in a wider range of corrosion resistant tubes and sockets than any other pressure gauge.

Check the adjoining list. And remember that tube socket and tip are fused into one piece by the exclusive Marsh "Conoweld" process.

Marsh alone combines the "Conoweld" construction, the copper-clad "Marshallloy" case, the finer Mastergauge movement, the Marsh "Recalibrator", the new "Safecase." Ask for data covering your specific needs.

**SIX CHOICES
of tubes and sockets**

4130 alloy steel tube with alloy steel tip and socket.

403 stainless steel tube with alloy steel tip and socket.

403 stainless steel tube with 416 stainless tip and socket.

316 stainless steel tube with alloy steel tip and socket.

316 stainless steel tube with 303 stainless tip and socket.

"K" Monel tube with alloy steel tip and socket.

MARSH INSTRUMENT CO., Sales affiliate of Jas. P. Marsh Corp. Dept. G, Skokie, Ill.
Marsh Instrument & Valve Co., (Can.) Ltd. • 8407 103rd St., Edmonton, Alberta, Can.

MARSH



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APRIL 14, 1958

**Get Extra Wear—
Extra Safety**

with the



All-purpose GAUNTLET



No. 7703

Give your workers complete forearm protection with this long-wearing neoprene-coated industrial gauntlet. Features: Six-inch cuffs with anti-rip binding . . . Flexible, fully-curved fingers . . . No bunching on palm—no binding on back . . . Reinforced thumb crotch for extra wear. Industrial weight, 14½" over-all.

Write today for Hood Glove Guide—shows you how to choose the RIGHT glove for EACH job.



HOOD RUBBER CO.,

a division of B. F. Goodrich Company

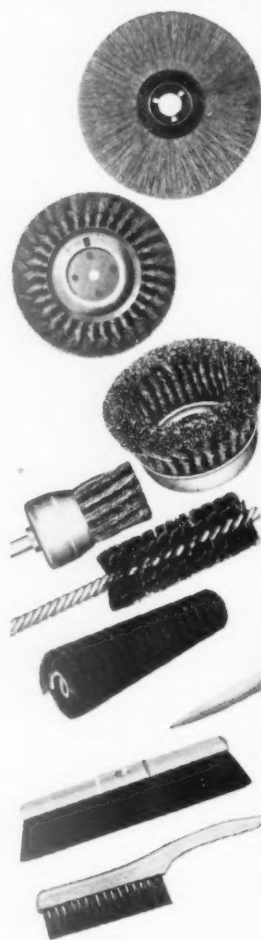
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RUBBER • NEOPRENE • PLASTIC INDUSTRIAL GLOVES

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**You Get Better Performance
and Greater Economy . . . with
PITTSBURGH
BRUSHING TOOLS!**



For almost every brushing job there is usually one combination that gives the best results. Pittsburgh has been satisfactorily supplying industry for many years with a wide selection of brush types, diameters, speeds and filaments that give superior performance with low cost.

• **No matter what kind of work you do, when you need brushes—call on Pittsburgh.** Our long experience in designing and making high quality brushing tools for every need can save you time and money. Write or call collect Pittsburgh Plate Glass Company, Brush Division, Dept. P-48, 3221 Frederick Avenue, Baltimore 29, Md.

**PITTSBURGH
BRUSHES**

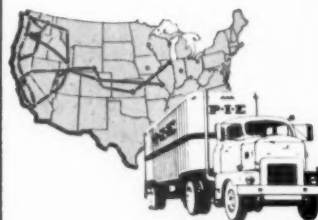


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168

Shippers

Agree ...

It's P-I-E!



P-I-E

PACIFIC INTERMOUNTAIN EXPRESS

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For all-'round deodorizing ...



ROUNDS

Fragrant, laborless
deodorant discs for urinals,
bowls, garbage pails, lockers, closets

Deodoroma ROUNDS cost in use averages only a fraction of one cent a day. Rounds are formed under 70,000 pounds pressure: are dense and durable. Fragrance is locked in: lasts until the last particle has vaporized—there's no harsh "moth cake odor." Packed eight to the telescoping box—each Round sealed airtight—easy-to-shape Holzit wire holder in every box. For literature write to The C. B. Dolge Company, Westport, Conn.

For free sanitary survey
of your premises ask
your Dolge service man



For More Information Write No. 296 on Inquiry Card—Page 32
PURCHASING



SPRINGS

All types

With many materials . . . oil tempered, hard-drawn and music spring steel, chrome vanadium, stainless and high-temperature spring alloys, spring brass, phosphor bronze, Everdure and monel metal.

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Tinned, copper, galvanized, lacquered. Electroplated with cadmium, chromium, nickel, brass, copper or zinc. Can be burnished and reheated for blue or straw-colored oxide finish. Plain unless otherwise specified.

5771

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PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

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APRIL 14, 1958

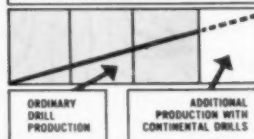
SHARP

MORE HOLES PER DRILL

Today's drilling problems on both standard and new metals require twist drills with *something extra* built into them. That's why Continental drills are so acceptable to leading cost conscious production plants. Ask your industrial jobber.

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SHOW YOU HOW
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POWERFUL NEW PLUNGER CLEARS CLOGGED TOILETS in a jiffy!



Clear messy, stuffed toilets
Cut maintenance costs with

TOILAFLEX

Toilet **ALL ANGLE** Plunger

Ordinary plungers don't seat properly. They permit compressed air and water to splash back. Thus you not only have a mess, but you lose the very pressure you need to clear the obstruction.

With "TOILAFLEX", expressly designed for toilets, no air or water can escape. The full pressure plows through the clogging mass and swishes it down. Can't miss!

Get a "TOILAFLEX" for your home too.
Positive insurance against stuffed toilet.

- Double-size cup, double-pressure
- Tapered tail gives air-tight fit
- Designed to flex at any angle
- Centers itself, can't skid around

\$265

Fully
Guaranteed

Order from your Supplier of
Hardware or Janitor Supplies

THE STEVENS-BURT CO., NEW BRUNSWICK, N. J.
A Division of The Water Master Company

For More Information Write No. 299 on Inquiry Card—Page 32



don't be a **M.O.O.S.***

Nobody wants to look like this M.O.O.S. He's the man plagued with steel supply problems and the resulting production snarls. But most of all, he's the man who forgot his Steel Warehouse Distributor!

Just around the corner from our M.O.O.S.* (meaning Man Out Of Steel) is the answer to most of his problems. That's where he finds the Steel Distributor with the inventory, equipment and manpower to deliver steel in large and small lots...and do it on short notice, if need be.

Don't be a M.O.O.S., too. Make it a habit to check your Steel Distributor...first!

- COLUMBIA STEEL & SHAFTING CO.
- SUMMERILL TUBING CO. DIV.
- SUMMERILL STAINLESS TUBE DIV.

PITTSBURGH 30, PA.

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CLASSIFIED DEPARTMENT

Contract Work • Used Equipment For Sale • Employment and Business Opportunities

Send orders to: CLASSIFIED DEPARTMENT • PURCHASING • 205 East 42nd Street, New York 17, New York

RATES

Undisplayed (set solid)	90¢ line
Positions Wanted	45¢ line
Displayed	\$8.50 inch

REQUIREMENTS

Undisplayed (want ad style), minimum charge 4 lines, prepaid. Figure forty-four letter spaces (five average words) to a line. Add one line for box number address; replies forwarded without charge. Discount of 10% for twelve consecutive displayed insertions. Forms close 15th of month preceding date of publication.

WE'RE LOOKING TO BUY!!!

- **INVENTORIES** •
- OF DISCONTINUED OR OFF SEASON LINES
- **MACHINERY** •
- PRODUCTION & SPECIAL BUILT
- **RAW MATERIALS — EQUIPMENT — PACKAGING SUPPLIES** •
- USED IN ALL INDUSTRIES

NOTE: — Our buying range is so varied that it is impossible to describe the many items we buy — we will make you a worth while offer for ANYTHING you have for sale.

NATIONAL TRADING CO., 202 CAMDEN ST., NEWARK 3, N. J.

In tenth year as one man purchasing department for small farm equipment manufacturing company. Desires challenging position with larger concern. Age 43, Married, 3 children. Write Box 1550, PURCHASING, 205 East 42nd St., New York 17, New York.

"Purchasing Agent or Assistant"
Twelve years Experience in Purchasing and Materials Control in Appliance and Motor Truck Industry—College Education—Married—Age 36—Relocate Midwest or South. Write Box 1553, PURCHASING, 205 E. 42nd St., New York 17, N.Y.

PURCHASING AGENT desires challenging position. 11 years diversified experience in industrial procurement; Electronics and Cosmetics. College graduate, age 38, married, veteran, member NAPA. Location Florida. Resume upon request. Write Box 1552, PURCHASING, 205 East 42nd St., New York 17, New York.

4 Remington-Robot Kardex Machines
60 Trays Per Machine
Holding 67 Cards 5x8 In size Per Tray
Ideal for Inventory Control or
Other Record Purposes

Electrically Operated
Original Cost \$1,850 Each
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If you're producing
parts like these...



And you want an
inventory of aluminum
screw machine stock...



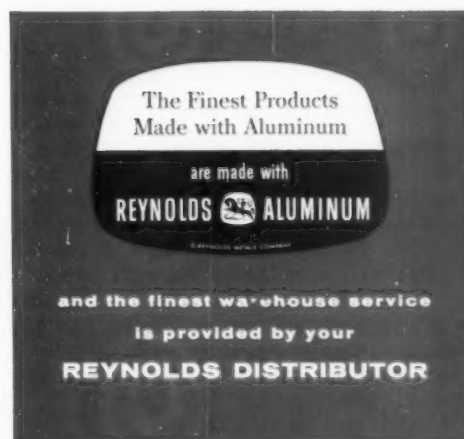
Get fast delivery
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Look under "Aluminum" in the classified phone book for your Reynolds Distributor

Reynolds Metals Company, Louisville 1, Kentucky

Watch Reynolds All-Family Television Program "DISNEYLAND", ABC-TV.



Letters To The Editor

U.S. WATCHES D. C.

We are very grateful for the publicity given the District of Columbia procurement manual in your December issue. The many letters we have received from city and state governments as well as industry in the United States, plus a few from foreign countries are testimonial to the popularity of your publication.

In keeping with our responsibilities as the capital city of the nation we must be alert to the constantly expanding influence of good purchasing practices on effective and economical city government.

To the professional purchasing agent the values of good purchasing techniques are implicit in every day operations. However, sometimes we may not fully appreciate their worth when applied to areas generally considered as outside the scope of purchasing.

For this reason we have taken the liberty of forwarding a copy of the report of the Procurement Office of the District of Columbia for the months of November and December 1957, which we feel dramatically illustrates the values of adapting purchasing methods in contracting for construction projects.

R. G. Wessells
Procurement Officer
Govt. of the District of Columbia
Washington, D. C.

PURCHASING ON MICROFILM

Please advise the cost of the 1957 microfilm edition of *PURCHASING Magazine*.

Thos. Z. Ennis
Mgr. Purchasing Services
Braniff International Airways
Dallas, Texas

• All requests for this additional editorial service should be sent to University Microfilms, 313 N. First Street, Ann Arbor, Michigan. Charges will vary according to the number of pages in each issue.

SPEAKERS BUREAU

I have always held all the people connected with *PURCHASING* in very high esteem in their ability to present facts and information which can be counted on as being the right answer. However, I must say that I certainly underestimated your staff this time.

Doug Francisco came down to Fort Wayne and presented to our association perhaps not the best program in its eighteen years of existence, but we have had none better. It was to me and I can express the feeling of any number of members, the outstanding program. The program was well received and the attention of the members was phenomenal.

Normally we have some fidgeters, but they certainly were so interested in Mr. Francisco's talk that there was no evidence of yawning, clock watching etc. My deepest appreciation to the staff of *PURCHASING* for making our Past Presidents Night, 1958, one to be long remembered.

G. R. Smith
American Rock Wool Corp.
Wabash, Indiana

The members of the Purchasing Agents Association of Georgia wish to take this further opportunity to extend our thanks for Harold Barnett's presence and contribution to the program at our February meeting. I am sure that all of those in attendance got some ideas from the address that will be a great help to them in their daily tasks.

I am enclosing a copy of the news release going to all of the local newspapers and the magazines published by the associations of the Seventh District. Realizing that this effort cannot do justice to Mr. Barnett's fine talk, I hope that I have touched on the most important points.

Joe C. Reeves
Atlanta Newspapers, Inc.
Atlanta, Georgia

HELP! HELP!

I am very interested in receiving from a company, school or individual, information regarding a basic, intermediate or advanced correspondence course in purchasing.

The University of Toronto, University Extension and the Canadian Association of Purchasing Agents offer a two-year correspondence course in purchasing leading to a certificate. Why not a university in the U.S.A. and N.A.P.A.?

Eugene K. Bruns
Buyer
Radio Condenser Company
Hoopeston, Illinois

• A number of colleges and universities in the United States do offer courses in Industrial Procurement but there is plenty of opportunity for more to take up the slack and provide this service. The educational committee of N.A.P.A., together with the local associations, is making tremendous strides in improving the number and quality of seminars being given.

LIKES OPINION POLL

I am very pleased to participate in your Purchasing Opinion Polls. The main benefit to me in taking part in a program of this sort is that I have the opportunity of outlining my personal opinion on the subject under consideration and on receipt of the final summarization I have the opportunity to compare my thinking with that of the cross section of other purchasing people you have contacted. It is especially gratifying when I find that my own personal opinion compares favorably on a question of importance.

E. G. Novotny
Purchasing Agent
Combustion Engineering, Inc.
Chattanooga, Tenn.

Flexloc thin nuts help you build lighter, more compact bolted assemblies

**Self-locking nuts save weight,
space, production time...
help increase product reliability**

Self-locking FLEXLOC thin nuts are 30% lower—and correspondingly lighter—than regular height locknuts of the same nominal diameter. They not only fit into spaces where regular height locknuts will not go, but also provide full locking action with shorter bolts, thus saving still more weight. With FLEXLOC thin nuts, you can design smaller, lighter bolted assemblies without sacrificing strength or reliability.

FLEXLOC thin nuts also help save production time. Because length of engagement of mating threads is shorter, fewer revolutions of hand wrenches or power nut runners are needed to seat FLEXLOC thin nuts.

FLEXLOC nuts are of 1-piece, all-metal design in which every thread, including those in the locking section, carries its full share of the tensile load. There are no nonmetallic inserts to waste head space or weaken the structure of the nut. And no auxiliary locking elements are required... nothing to put together, come apart or get lost. You can use a FLEXLOC as a locknut or a stopnut. It locks, seated or not, wherever wrenching stops. It will not vibrate loose, yet can be removed easily and reused many times.

See your authorized SPS distributor for more information. He carries FLEXLOC self-locking nuts—thin height and regular—in a full range of standard sizes and materials. Or write Flexloc Locknut Division, STANDARD PRESSED STEEL CO., Jenkintown 31, Pa.

See us at the ASTE Show, May 1 to 8, Booth 322

hiR
High Reliability factor

At SPS we apply a dynamic standard of quality—continually refined—so that our fasteners will always have the high reliability factor required by today's faster speeds, higher temperatures, and greater dynamic stresses. By using SPS fasteners in your assemblies, you help increase overall reliability—the certainty of predictable performance under actual service conditions.

For more information on the full meaning of reliability, write for a copy of the new SPS booklet "Concerning High Reliability."

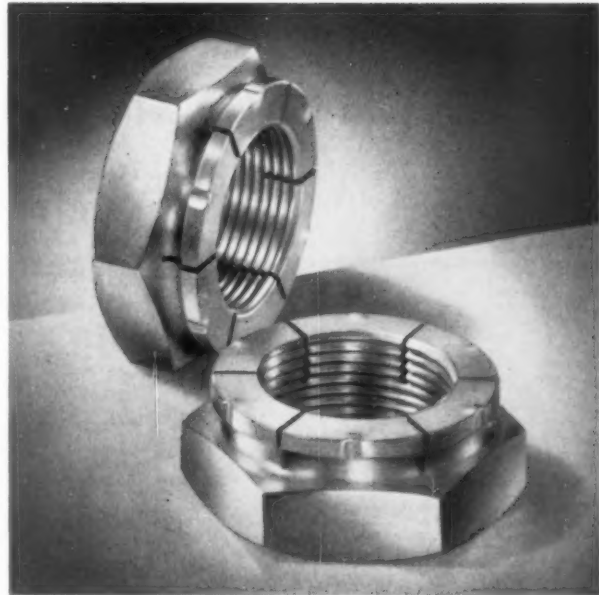
We also manufacture precision titanium fasteners write for free booklet

SPS

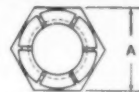
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SPECIFICATIONS
FLEXLOC THIN NUTS



NATIONAL COARSE THREAD—U.S.S

SIZE	A INCHES	H INCHES	WIDTH ACROSS CORNERS	WEIGHT PER 1000 NUTS
6-32	.312	.125	.361	1.8 *
8-32	.344	.172	.397	2.8
10-24	.375	.172	.433	3.3
1/4-20	.438	.203	.505	5.4
3/8-18	.563	.250	.649	11.6
1/2-16	.625	.265	.722	14.9
5/8-14	.750	.312	.866	24.9
3/4-13	.813	.312	.938	28.4
7/8-12	.875	.359	1.010	36.1
1-11	1.000	.391	1.155	54.1
3/4-10	1.125	.406	1.299	69.2
7/8-9	1.312	.469	1.516	107.5
1-8	1.500	.563	1.732	171.6

NATIONAL FINE THREAD—S.A.E.

6-40	.312	.125	.361	1.8
8-36	.344	.172	.397	2.8
10-32	.375	.172	.433	3.3
1/4-28	.438	.203	.505	5.4
3/8-24	.500	.250	.577	8.7
1/2-24	.563	.266	.649	11.5
5/8-20	.625	.312	.722	14.9
3/4-20	.750	.312	.866	21.7
7/8-18	.875	.359	1.010	36.2
1-18	.938	.391	1.082	42.4
3/4-16	1.063	.406	1.227	54.5
7/8-14	1.250	.469	1.443	84.6
1-14	1.438	.563	1.660	136.3
1 1/8-12*	1.625	.625	1.876	193.5
1 1/4-12*	1.813	.750	2.093	296.0
1 3/8-12*	2.000	.812	2.309	389.0
1 1/2-12*	2.187	.875	2.526	498.0

*Steel only (plain or cadmium plated) in stock sizes.

Standard FLEXLOC thin nuts are available in plain or cadmium plated alloy steel for temperatures to 550°F; in plain or silver plated corrosion resisting steel for temperatures to 750°F; and in brass and aluminum for temperatures to 250°F.

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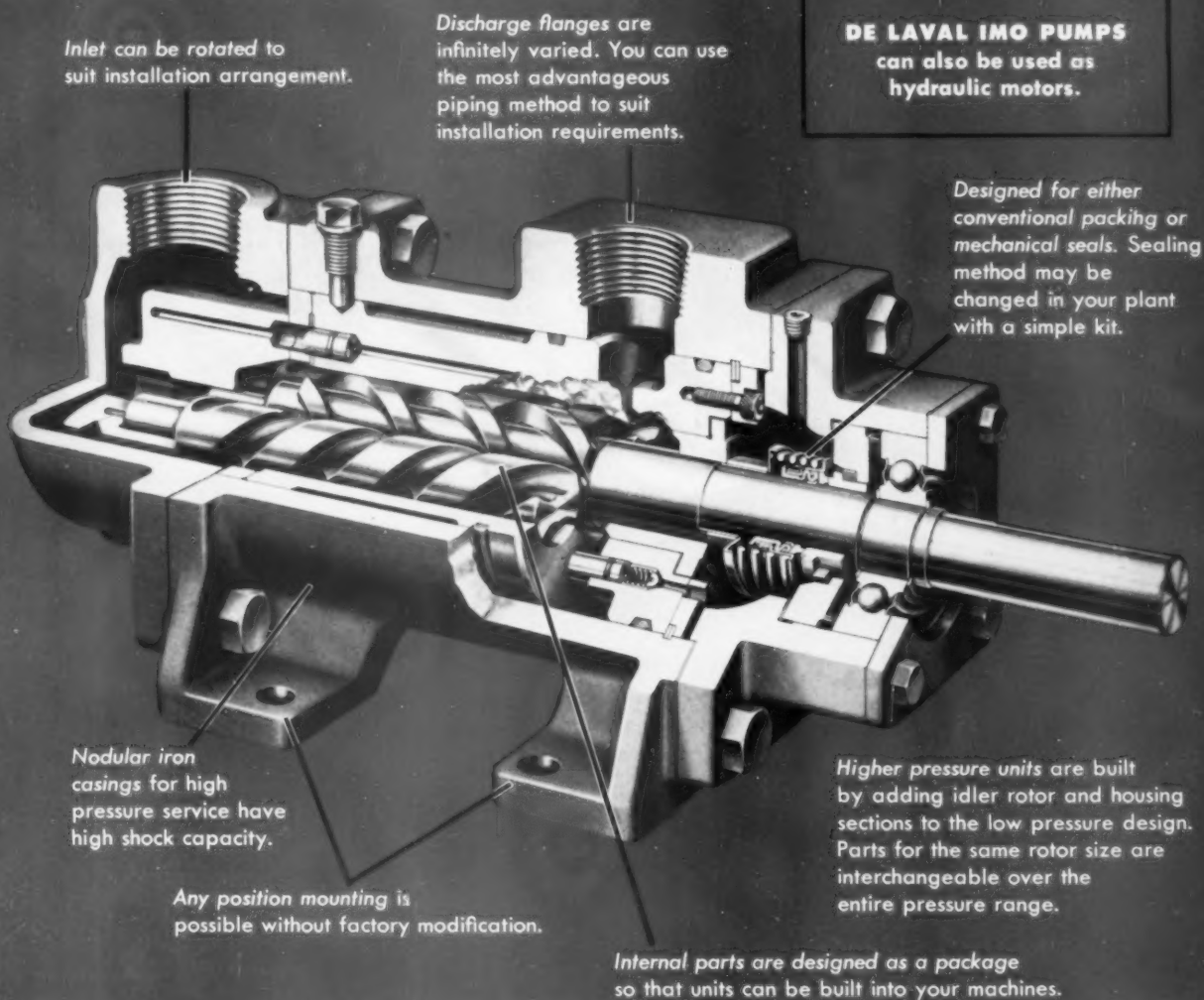
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DE LAVAL**IMO PUMPS***are now more versatile than ever*

De Laval IMO pumps have proved that they do a dependable job over long years of service. The reason is IMO design simplicity. These constant displacement rotary pumps have only three moving parts—smoothly intermeshing rotors that propel the fluid axially in a steady flow without churning, pocketing or pulsation. There are no timing gears, cams, valves, sliding vanes, or reciprocating parts to wear or become noisy. *Quiet*, compact IMO pumps are excellent for direct-connected, high-speed operation.

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and so economical...
good-will builder in the washroom



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attitude toward you"*

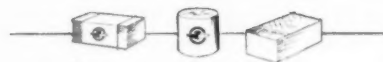
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The American Brass Company,
88 Park Avenue,
New York 16, New York.

October 25, 1967.

Gentlemen, **SUMMARY OF ENGINEERING LABORATORY REPORT NO. 102557**

SUBJECT: Fatigue Life Test of "Duraflex", Superfine-Grain Phosphor Bronze and Commercial Quality Grade A Phosphor Bronze spring wire.

SPECIMENS: Compression springs made from each material, were coiled on arbors to avoid tool marks. The springs had squared ends, a high pitch to obtain high stresses and were heated after coiling in boiling water for 1 hour to relieve residual coiling stresses.

CALIBRATION: Each spring had its physical dimensions measured with micrometers and vernier calipers and was load tested in a Comox Elasticometer Precision Spring Testing Instrument, before fatigue testing and after each 100,000 cycles of deflection to determine loss of load, if any.

FATIGUE TESTING: A representative number of springs from each material were tested simultaneously under identical conditions.

STRESS: The stress in the springs, including curvature correction, during the tests were as follows:

Stress at Initial Installed Position	36,600 p.s.i.
Stress at final deflected position	73,200 p.s.i.
Stress Range during deflection	36,600 p.s.i.

These stresses, for endurance limit testing, are exceptionally high for phosphor bronze spring wire - far higher than those ordinarily recommended for Beryllium-Copper or Stainless Steel for such severe service and are comparable to those used for good quality Spring Steel.

RESULTS: Grade A Springs broke at average deflections of 505,700.

Duraflex Springs were still satisfactory with no appreciable loss of load at 2,000,000 deflections.

CONCLUSIONS:

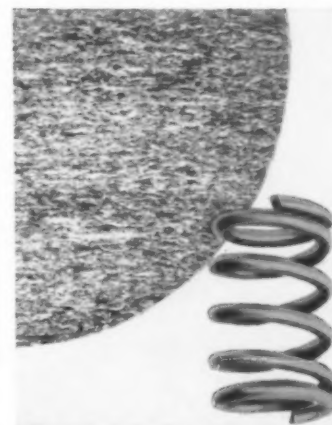
1. Design stresses for Duraflex can be at least 30% higher than those used for Grade A Phosphor Bronze and as high if not higher than design stresses recommended for Beryllium Copper.
2. High endurance and long fatigue life at high stresses can be expected from springs made of Duraflex Phosphor Bronze.

CERTIFICATION: We certify the above summary of our report is accurate, in accordance with the facts and is true in every respect.

Respectfully submitted,
THE CARLSON COMPANY
Harold Carlson
Harold C. Carlson, P.E.
Licensed Professional Engineer.



Spring of Alloy A Phosphor Bronze, shown actual size, which broke just after 500,000 deflections. Micrograph (75x) shows typical grain structure of this metal.



Spring of Duraflex showed no appreciable loss of load after 2,000,000 deflections in same test. Micrograph (75x) shows typical superfine-grain structure of Duraflex.

Duraflex is a registered trade-mark for a higher quality phosphor bronze in sheet and wire forms, recently developed by American Brass Company research. Yet it costs no more than regular phosphor bronze. For detailed information—for a copy of the test data—write The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

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DURAFLEX

Superfine-Grain Phosphor Bronze

A product of

ANACONDA[®]

Made by The American Brass Company

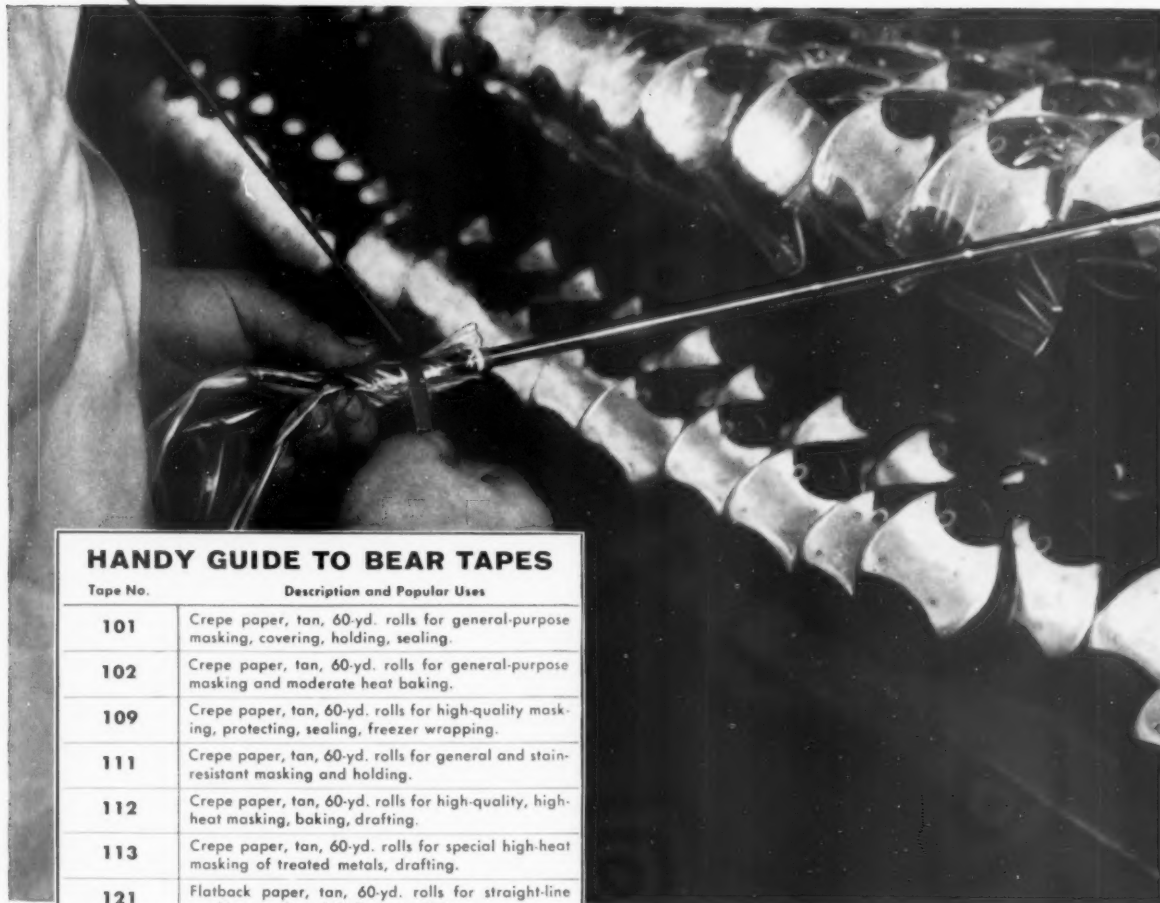
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102	Crepe paper, tan, 60-yd. rolls for general-purpose masking and moderate heat baking.
109	Crepe paper, tan, 60-yd. rolls for high-quality masking, protecting, sealing, freezer wrapping.
111	Crepe paper, tan, 60-yd. rolls for general and stain-resistant masking and holding.
112	Crepe paper, tan, 60-yd. rolls for high-quality, high-heat masking, baking, drafting.
113	Crepe paper, tan, 60-yd. rolls for special high-heat masking of treated metals, drafting.
121	Flatback paper, tan, 60-yd. rolls for straight-line masking, sealing, labeling, sterilizing.
123	Flatback paper, tan, 60-yd. rolls for high-temperature holding and sealing applications.
131	Flatback rope paper, tan, 60-yd. rolls with high tensile strength for holding, splicing, wrapping.
151	Flatback paper, 4 colors, 60-yd. rolls for color in identifying, decorating, sterilizing.
161	Flatback rope paper, red, 60- and 180-yd. rolls for closing, sealing, vegetable packaging.
186	Crepe paper, black, 60-yd. rolls for sealing cartons, containers, fibre tubes, auto apertures.
189	Crepe paper, red, 60- and 180-yd. rolls for closing, sealing, vegetable packaging.
190	Flat, pressure-sensitive paper, 100-yd. rolls for protecting polished and finished materials.
196	Flat paper, yellow and white, 60- and 180-yd. rolls, printable, for labeling, identifying.
200 & 205	Crepe paper, glass-reinforced, tan, 60-yd. rolls for packing, shipping, bundling.
507, 510, 520	Vinyl plastic, black, 20', 66-ft., 36-yd. rolls, full U.L. approval for electrical insulating, wiring.
660	Crepe paper, tan, double face (coated both sides), 60-yd. rolls for bonding, laminating, splicing.
941	Flat paper tissue, tan, double face (coated both sides), 36-yd. rolls for bonding, laminating, splicing.

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